

AD-A132 324

INDIRECT FIRE CASUALTY ASSESSMENT (IFCAS)(U) SCIENCE
APPLICATIONS INC LA JOLLA CA W B DEGRAF 29 JUN 83
MDA903-83-C-0222

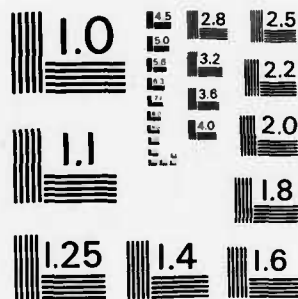
1/1

UNCLASSIFIED

F/G 9/2

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

ADA132324

INDIRECT FIRE CASUALTY ASSESSMENT

(IFCAS)

APPROVED FOR PUBLIC RELEASE
DISTRIBUTION UNLIMITED

29 June 1983

Sponsored by

Defense Advanced Research Projects Agency (DOD)

ARPA order No. 4739

Under Contract No. MDA903-83-C-0222 issued by
Department of Army, Defense Supply Service - Washington
Washington D.C. 20310

Prepared by

Science Applications, Inc.

1710 Goodridge Dr.
McLean, VA 22102

1200 Prospect St.
La Jolla, CA 92038

DTIC
ELECTE
SEP 08 1983
S D E

DTIC FILE COPY

83 09 08 041



Science Applications, Inc.

This report was prepared by Science Applications for the Defense Advance Research Projects Agency under Contract no. MDA903-83-C-0222, Large Scale Simulation, which expires 30 September 1983. The SAI Project Manager for this project is Mr. William B. DeGraf, phone (703) 734-5972.

This report has been reviewed and approved for distribution.

William B. DeGraf
Project Manager

Peter R. Peltz
Department Manager

SAI

FOREWORD

This document supplements the briefing on IFCAS provided to the LSS group on 29 June 1983. It contains the documentation on the IFCAS.

Section 1 of this document provides a functional capabilities summary of the Indirect Fire Casualty Assessment Processor. The processor itself is detailed in Section 2.0. Attachment A provides illustrations of Indirect Fire Casualty Assessment Processor Data Structures.

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	<i>plc</i>
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A	



SCIENCE APPLICATIONS, INC.

SECTION 1

CAPABILITIES SUMMARY

INDIRECT FIRE CASUALTY ASSESSMENT (IFCAS)



SCIENCE APPLICATIONS, INC.

1.0 CAPABILITIES SUMMARY - INDIRECT FIRE CASUALTY ASSESSMENT (IFCAS)

Capabilities provided by the CIS software in support of indirect fire events shall include:

- o maintenance of a pre-planned target list,
- o maintenance of a list of groups of targets, and
- o maintenance/processing of indirect fire missions.

The following paragraphs present discussions of each of the above listed functions describing operator inputs, software processing and outputs provided by the system.

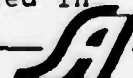
1.1 Pre-Planned Targets

The operator shall have the capability of defining a pre-planned target list which may contain a maximum of 1,000 pre-planned targets (i.e., 500 BLUEFOR targets and 500 OPFOR targets). For each pre-planned target, the operator shall specify FORCE, TARGET NUMBER and TARGET LOCATION as defined below.

Field	Valid Operator Input
FORCE	BLUEFOR OPFOR
TARGET NUMBER	5 character (alpha- numeric) designation.
TARGET LOCATION	UTM coordinate

The pre-planned target list shall be maintained in the system data base for use in defining fire missions (see discussion below). The operator shall have the capability to delete targets from the pre-planned target list at any time during real time exercise operations. Input and update of the pre-planned target list shall be accomplished through use of the INDIRECT FIRE interactive menu as presented in Figure 1.1.

The operator shall be provided the capability to request display of the pre-planned target list on the Support Display. Targets on the list shall be presented in either alphanumeric or location proximity order, as per operator specification. Each time the operator requests a display of the target list in location proximity order, he shall provide the UTM coordinate upon which the system shall base its list order. The target list display is detailed in Figure 1.2.



DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
1	List	ACTION	DEFINE PRE-PLANNED TARGET DEFINE GROUP OF TARGETS DELETE TARGET/GROUP DEFINE FIRE MISSION DEFINE TARGET SERIES EXECUTE ON-CALL MISSION	Defines menu display options.
<u>IF DEFINE PRE-PLANNED TARGET:</u>				
2	List	FORCE	BLUEFOR OPFOR	Specifies target number.
3	Alpha/ Numeric Entry	TARGET NUMBER	5 spaces to be filled in from Alpha/Numeric pad.	
4	Alpha/ Numeric Entry	TARGET LOCATION	10 spaces to be filled in from Alpha/Numeric pad.	
5	List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.
<u>IF DEFINE GROUP OF TARGETS:</u>				
2	List	FORCE	BLUEFOR OPFOR	Specifies designation for group of targets.
3	Alpha/ Numeric Entry	GROUP DESIGNATION	3 spaces to be filled in from Alpha/Numeric pad.	

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 1 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
4	List	TARGETS	List of targets previously defined and input to the system.	Specifies targets belonging to group.
5	List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.
<u>IF DELETE TARGET/GROUP:</u>				
2	List	FORCE	BLUEFOR OPFOR	Defines menu display options.
3	List	ACTION	DELETE TARGET DELETE GROUP	
<u>IF DELETE TARGET:</u>				
4	List	TARGETS	List of targets previously defined and input to the system.	Defines selection of targets to be deleted from the data base. Multiple selections allowed.
5	List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 2 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
<u>IF DELETE GROUP:</u>				
4	List	GROUPS	List of groups of targets previously defined and input to the system.	Defines selection of groups of targets to be deleted from the data base. Multiple selections allowed.
5	List	----	IGNORE REPEAT NONE	Specifies manner of entry completion.
<u>IF DEFINE FIRE MISSION:</u>				
2	List	FORCE	BLUEFOR OPFOR	Defines menu display options.
3	List	TYPE MISSION	SCHEDULED ON CALL IMMEDIATE	
<u>IF SCHEDULED:</u>				
4	List	ACTION	NEW SCHEDULED MISSION EDIT SCHEDULED MISSION CANCEL SCHEDULED MISSION	

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 3 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF NEW SCHEDULED MISSION:				
5	List	IDENTIFY TARGET	NEW TARGET EXISTING TARGET NEW GROUP OF TARGETS EXISTING GROUP OF TARGETS	
IF NEW TARGET:				
6	Alpha/ Numeric Entry	TARGET NUMBER	5 spaces to be filled in from Alpha/Numeric pad.	Specifies target number.
7	Alpha/ Numeric Entry	TARGET LOCATION	10 spaces to be filled in from Alpha/Numeric pad.	Specifies DIM coordinate of target.
8	List	FIRING UNIT	List of BLUFOR or OPFOR firing units identified in system data base.	Defines selection of unit to execute fire mission.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
FOR BLUEFOR 155-mm ONLY:	9 List	WEAPON	FOR BLUEFOR: 105-mm 107-mm 155-mm 175-mm 8" FOR OPTOR: 122-mm HOWITZER 152-mm HOWITZER 152-mm GUN/HOWITZER	Defines selection of weapon to be fired.
	10 List	SHELL	HE HERAP HC ILLUM WP TCM DPICM FASCAM CLGP	Defines selection of shell to be used. Input is optional. (Default: HE)
	11 List	FUSE	PD DELAY VT	Specifies selection of fuse to be used. Input is optional. (Default: PD)
	12 List	ROUNDS	BTRY 1 BN 1 BTRY 2 BN 2 BTRY 3 BN 3 BTRY 4 BN 4 BTRY 5 BN 5 BTRY 6 BN 6 BTRY 7 BN 7 BTRY 8 BN 8 BTRY 9 BN 9 BTRY 10 BN 10	Specifies number of rounds to be delivered. Input is optional. (Default: BTRY 1)
	List	CHARGE	CHARGE 7 CHARGE 8	Specifies firing charge to be used. Input is optional. (Default: CHARGE 7)

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 5 OF 29)

DISPLAY GROUP	TYPE	TEXT	CONTENT	DESCRIPTION
IF TIME:	13 List	SCHEDULE MISSION EXECUTION	TIME TARGET SERIES	Defines menu display options.
	14 Alpha/ Numeric Entry	TIME	DD MON YR : (Current date displayed for edit (if required) followed by 4 spaces to be filled in with HH:MM values)	Specifies execution date and time of Live Mission.
	15 List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF TARGET SERIES:	14 List	SELECT SERIES	111 112 113 114 115 116 117 118 119 1110	Specifies execution time is in accordance with particular target series.
	15 Alpha/ Numeric Entry	OFFSET TIME	3 spaces to be filled in from Alpha/Numeric pad.	Specifies target series offset time for mission (± up to 59 minutes).
	16 List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 6 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF EXISTING TARGET:	6	PRE-PLANNED TARGET	List of targets previously defined and input to the system.	Defines selection of target. NOTE: Upon selection of target, all parameters describing the target are displayed for review.
	7	FIRING UNIT	List of HIFOR or OPFOR firing units identified in system data base.	Defines selection of unit to execute Fire Mission.
	8	WEAPON	FOR HIFOR: FOR OPFOR: 105-mm 122-mm HOWITZ/1R 107-mm 152-mm HOWITZ/1R 155-mm 152-mm GUN/HOWITZ/1R 175-mm 8"	Defines selection of weapon to be fired.
	9	SHELL	HE HURAP HC TELUM WP TCM OPICM FASCAM CLGP	Defines selection of shell to be used. Input is optional. (Default: HE)
	10	FUSE	PD DELAY V1	Specifies selection of fuse to be used. Input is optional. (Default: PD)

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 7 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
FOR BATTERY 155-mm ONLY:	11 List	ROUNDS	BTRY 1 BN 1 BTRY 2 BN 2 BTRY 3 BN 3 BTRY 4 BN 4 BTRY 5 BN 5 BTRY 6 BN 6 BTRY 7 BN 7 BTRY 8 BN 8 BTRY 9 BN 9 BTRY 10 BN 10	Specifies number of rounds to be delivered. Input is optional. (Default: BTRY 1)
	List	CHARGE	CHARGE 7 CHARGE 8	Specifies firing charge to be used. Input is optional. (Default: CHARGE 7)
IF TIME:	13 List	SCHEDULE MISSION EXECUTION	TIME TARGET SERIES	Defines menu display options.
	14 Alpha/Numeric Entry	TIME	DD MON YR : (current date displayed for edit (if required) followed by 4 spaces to be filled in with HH:MM values)	Specifies execution date and time of Fire Mission.
	15 List	----	IGNORI REPEAT DONE	Specifies manner of entry completion.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 8 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
<u>IF TARGET SERIES:</u>	14 List	SELECT SERIES	111 112 113 114 115 116 117 118 119 1110	Specifies execution time is in accordance with particular target series.
	15 Alpha/Numeric Entry	OFFSET TIME	3 spaces to be filled in from Alpha/Numeric pad.	Specifies target series offset time for mission (1 up to 59 (minutes)).
	16 List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.
<u>IF NEW GROUP OF TARGETS:</u>	6 Alpha/Numeric Entry	GROUP DESIGNATION	3 spaces to be filled in from Alpha/Numeric pad.	Specifies designation for group of targets.
	7 List	TARGETS	List of targets previously defined and input to the system.	Specifies targets belonging to group.
	8 List	FIRING UNIT	List of BLHETOR or OPTOR firing units identified in system data base.	Defines selection of unit to execute Fire Mission.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 9 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
9	List	WEAPON	FOR BLUEFOR: FOR OPTFOR: 105-mm 122-mm HOWITZER 107-mm 152-mm HOWITZER 155-mm 152-mm GUN/HOWITZER 175-mm 8"	Defines selection of weapon to be fired.
10	List	SHELL	HE HERAP HC FLUM WP TCM DPICM FASCAM CIGP	Defines selection of shell to be used. Input is optional. (Default: HE)
11	List	FUSE	PD DELAY VT	Specifies selection of fuse to be used. Input is optional. (Default: PD)
12	List	ROUNDS	BTRY 1 BN 1 BTRY 2 BN 2 BTRY 3 BN 3 BTRY 4 BN 4 BTRY 5 BN 5 BTRY 6 BN 6 BTRY 7 BN 7 BTRY 8 BN 8 BTRY 9 BN 9 BTRY 10 BN 10	Specifies number of rounds to be delivered. Input is optional. (Default: BTRY 1)
FOR BLUEFOR 155-mm ONLY:	List	CHARGE	CHARGE 7 CHARGE 8	Specifies firing charge to be used. Input is optional. (Default: CHARGE 7)

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 10 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF TIME:	13. List	SCHEDULE MISSION EXECUTION	TIME TARGET SERIES	Defines menu display options.
	14 Alpha/ Numeric Entry	TIME	DD MON YR : (current date displayed for edit (if required) followed by 4 spaces to be filled in with HH:MM values)	Specifies execution date and time of Fire Mission.
	15 List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.
IT TARGET SERIES:	14 List	SELECT SERIES	111 112 113 114 115 116 117 118 119 1110	Specifies execution time is in accordance with particular target series.
	15 Alpha/ Numeric Entry	OFFSET TIME	3 spaces to be filled in from Alpha/Numeric pad.	Specifies target series offset time for mission (1 up to 59 minutes).
	16 List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 11 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF EXISTING GROUP OF TARGETS:	6 List	GROUP OF TARGETS	List of Groups of Targets previously defined and input to the system.	Defines selection of Group of Targets. NOTE: Upon selection of Group of targets, all parameters describing the Group are displayed for review.
	7 List	FIRING UNIT	List of BLUEFOR or OPFOR firing units identified in system data base.	Defines selection of unit to execute Fire Mission.
	8 List	WEAPON	For BLUEFOR: FOR OPFOR: 105-mm 122-mm HOWITZER 107-mm 152-mm HOWITZER 155-mm 152-mm GUN/HOWITZER 175-mm 8"	Defines selection of weapon to be fired.
	9 List	SHELL	HE DERAP HC TLDM WP TCM DPICM FASCAM CLGP	Defines selection of shell to be used. Input is optional. (Default: HE)
	10 List	FUSE	PD DELAY VT	Specifies selection of fuse to be used. Input is optional. (Default: PD)

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 12 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
11	List	ROUNDS	BTRY 1 BN 1 BTRY 2 BN 2 BTRY 3 BN 3 BTRY 4 BN 4 BTRY 5 BN 5 BTRY 6 BN 6 BTRY 7 BN 7 BTRY 8 BN 8 BTRY 9 BN 9 BTRY 10 BN 10	Specifies number of rounds to be delivered. Input is optional. (Default: BTRY 1)
	List	CHARGE	CHARGE 7 CHARGE 8	Specifies firing charge to be used. Input is optional. (Default: CHARGE 7)
12	List	SCHEDULE MISSION EXECUTION	TIME TARGET SERIES	Defines menu display options.
13	Alpha/ Numeric Entry	TIME	DD MON YR : (current date displayed for edit (if required) followed by 4 spaces to be filled in with HH:MM values)	Specifies execution date and time of fire mission.
	List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 13 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
<u>IF TARGET SERIES:</u>	13 List	SELECT SERIES	H1 H2 H3 H4 H5 H6 H7 H8 H9 H10	Specifies execution time is in accordance with particular target series.
	14 Alpha/Numeric Entry	OFFSET TIME	3 spaces to be filled in from Alpha/Numeric pad.	Specifies target series offset time for mission (t up to 59 minutes).
	15 List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.
<u>IF EDIT SCHEDULED MISSION:</u>	5 List	FIRE MISSION	List of scheduled fire missions previously defined and input to the system.	Defines selection of fire mission data to be updated/modified. NOTE: Upon selection of fire mission, all parameters describing the fire mission are displayed for review.
	6 List	SELECT PARAMETER FOR EDIT	List of fire mission parameters which are available for edit.	Allows operator to update/modify fire mission entries.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 14 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF CANCEL SCHEDULED MISSION:	7 List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.
	5 List	FIRE MISSION	List of scheduled fire missions previously defined and input to the system.	Defines selection of fire mission to be cancelled.
	6 List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF ON-CALL:	4 List	ACTION	NEW ON-CALL MISSION EDIT ON-CALL MISSION CANCEL ON-CALL MISSION	Defines menu display options.
IF NEW ON-CALL MISSION:	5 List	IDENTIFY TARGET	NEW TARGET EXISTING TARGET NEW GROUP OF TARGETS EXISTING GROUP OF TARGETS	Defines menu display options.
IF NEW TARGET:	6 Alpha/ Numeric Entry	TARGET NUMBER	5 spaces to be filled in from Alpha/Numeric pad.	Specifies target number.
	7 Alpha/ Numeric Entry	TARGET LOCATION	10 spaces to be filled in from Alpha/Numeric pad.	Specifies UTM coordinate of target.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 15 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
8	List	FIRING UNIT	List of BLUFOR or OPFOR firing units identified in system data base.	Defines selection of unit to execute Fire Mission.
9	List	WEAPON	For BLUFOR: For OPFOR: 105-mm 122-mm HOWITZER 107-mm 152-mm HOWITZER 155-mm 152-mm GUN/HOWITZER 175-mm 8"	Defines selection of weapon to be fired.
10	List	SHELL	HE HERAP HC TLUM WP TCM DPICM FASCAM CLGP	Defines selection of shell to be used. Input is optional. (Default: HE)
11	List	FUSE	PD DELAY VT	Specifies selection of fuse to be used. Input is optional. (Default: PD)
12	List	ROUNDS	BTRY 1 BN 1 BTRY 2 BN 2 BTRY 3 BN 3 BTRY 4 BN 4 BTRY 5 BN 5 BTRY 6 BN 6 BTRY 7 BN 7 BTRY 8 BN 8 BTRY 9 BN 9 BTRY 10 BN 10	Specifies number of rounds to be delivered. Input is optional. (Default: PD)

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 16 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
FOR BLUFOR 155-mm ONLY:	List	CHARGE	CHARGE 7 CHARGE B	Specifies firing charge to be used. Input is optional. (Default: CHARGE 7)
13	List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF EXISTING TARGET:				
6	List	PRE-PLANNED TARGET	List of targets previously defined and input to the system.	Defines selection of target. NOTE: Upon selection of target, all parameters describing the target are displayed for review.
7	List	FIRING UNIT	List of BLUFOR or OPFOR firing units identified in system data base.	Defines selection of unit to execute Fire Mission.
8	List	WEAPON	For BLUFOR: For OPFOR: 105-mm 122-mm HOWITZER 107-mm 152-mm HOWITZER 155-mm 152-mm GUN/HOWITZER 8"	Defines selection of weapon to be fired.

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
9	List	SHELL	HE HERAP HC TELUM WP TCH DPICM TASCAM CLGP	Defines selection of shell to be used. Input is optional. (Default: HE)
10	List	FUSE	PD DELAY VT	Specifies selection of fuse to be used. Input is optional. (Default: PD)
11	List	ROUNDS	BTRY 1 BN 1 BTRY 2 BN 2 BTRY 3 BN 3 BTRY 4 BN 4 BTRY 5 BN 5 BTRY 6 BN 6 BTRY 7 BN 7 BTRY 8 BN 8 BTRY 9 BN 9 BTRY 10 BN 10	Specifies number of rounds to be delivered. Input is optional. (Default: BTRY 1)
FOR BLUEFOR 155-mm ONLY:	List	CHARGE	CHARGE 7 CHARGE 8	Specifies firing charge to be used. Input is optional. (Default: CHARGE 7)
12	List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 18 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
<u>II. NEW GROUP OF TARGETS:</u>				
6	Alpha/Numeric Entry	GROUP DESIGNATION	3 spaces to be filled in from Alpha/Numeric pad.	Specifies designation for group of targets.
7	List	TARGETS	List of targets previously defined and input to the system.	Specifies targets belonging to group.
8	List	FIRING UNIT	List of BLUEFOR or OPFOR firing units identified in system data base.	Defines selection of unit to execute Fire Mission.
9	List	WEAPON	For BLUEFOR: For OPFOR: 105-mm 122-mm HOWITZER 107-mm 152-mm HOWITZER 155-mm 152-mm GUN/HOWITZER 175-mm 8"	Defines selection of weapon to be fired.
10	List	SHELL	HE HERAP HC ILLUM WP TCM DPICM FASCAM CLGP	Defines selection of shell to be used. Input is optional. (Default: HE)
11	List	FUSE	PD DELAY VF	Specifies selection of fuse to be used. Input is optional. (Default: PD)

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 19 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
FOR BLUEFOR 155-mm ONLY:	12 List	ROUNDS	BTRY 1 BN 1 BTRY 2 BN 2 BTRY 3 BN 3 BTRY 4 BN 4 BTRY 5 BN 5 BTRY 6 BN 6 BTRY 7 BN 7 BTRY 8 BN 8 BTRY 9 BN 9 BTRY 10 BN 10	Specifies number of rounds to be delivered. Input is optional. (Default: BTRY 1)
	List	CHARGE	CHARGE 7 CHARGE 8	Specifies firing charge to be used. Input is optional. (Default: CHARGE 7)
IF EXISTING GROUP OF TARGETS:	13 List	--	IGNORE REPEAT DONE	Specifies manner of entry completion.
	6 List	GROUP OF TARGETS	List of Groups of Targets previously defined and input to the system.	Defines selection of Group of Targets. NOTE: Upon selection of Group of Targets, all parameters describing the Group are displayed for review.
	7 List	FIRING UNIT	List of BLUEFOR or OPFOR firing units identified in system data base.	Defines selection of unit to execute Fire Mission.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 20 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
8	List	WEAPON	For BATTOR: For OPFOR: 105-mm 122-mm HOWITZER 107-mm 152-mm HOWITZER 155-mm 152-mm GUN/HOWITZER 175-mm 8"	Defines selection of weapon to be fired.
9	List	SHELL	HE HERAP HC ILLUM WP TCM DPICM FASCAM CLGP	Defines selection of shell to be used. Input is optional. (Default: HE)
10	List	FUSE	PD DELAY VI	Specifies selection of fuse to be used. Input is optional. (Default: PD)
11	List	ROUNDS	BTRY 1 BN 1 BTRY 2 BN 2 BTRY 3 BN 3 BTRY 4 BN 4 BTRY 5 BN 5 BTRY 6 BN 6 BTRY 7 BN 7 BTRY 8 BN 8 BTRY 9 BN 9 BTRY 10 BN 10	Specifies number of rounds to be delivered. Input is optional. (Default: BTRY 1)

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 21 of 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
FOR BDEFOR 155-100 ONLY:	List	CHARGE	CHARGE 7 CHARGE 8	Specifies firing charge to be used. Input is optional. (Default: CHARGE 7)
	12 List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF EDIT ON-CALL MISSION:	5 List	FIRE MISSION	List of on-call fire missions previously defined and input to the system.	Defines selection of fire mission data to be updated/modified. NOTE: Upon selection of fire mission, all parameters describing the fire mission are displayed for review.
	6 List	SELECT PARAMETER FOR EDIT	List of fire mission parameters which are available for edit.	Allows operator to update/modify fire mission entries.
	7 List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.
IF CANCEL ON-CALL MISSION:	5 List	FIRE MISSION	List of on-call fire missions previously defined and input to the system.	Defines selection of fire mission to be cancelled.
	6 List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 22 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
IF IMMEDIATE:				
4	List	IDENTIFY TARGET	NEW TARGET EXISTING TARGET	Defines menu display options.
IF NEW TARGET:				
5	Alpha/ Numeric Entry	TARGET NUMBER	5 spaces to be filled in from Alpha/Numeric pad.	Specifies target number. Input is optional.
6	Alpha/ Numeric Entry	TARGET LOCATION	10 spaces to be filled in from Alpha/Numeric pad.	Specifies UTM coordinate of target.
7	List	FIRING UNIT	List of BLUEFOR or ORPHEOR firing units identified in system data base.	Defines selection of unit to execute Fire Mission.
8	List	WEAPON	For BLUEFOR: For ORPHEOR: 105-mm 122-mm HOWITZER 107-mm 152-mm HOWITZER 155-mm 152-mm GUN/HOWITZER 175-mm B"	Defines selection of weapon to be fired.
9	List	SHELL	HE HERAP HC HLLUM WP TCM DP/TCM FASCAM CLGP	Defines selection of shell to be used. Input is optional. (Default: HE)

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 23 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
10	List	FUSE	PD DELAY VT	Specifies selection of fuse to be used. Input is optional. (Default: PD)
11	List	ROUNDS	BTRY 1 BN 1 BTRY 2 BN 2 BTRY 3 BN 3 BTRY 4 BN 4 BTRY 5 BN 5 BTRY 6 BN 6 BTRY 7 BN 7 BTRY 8 BN 8 BTRY 9 BN 9 BTRY 10 BN 10	Specifies number of rounds to be delivered. Input is optional. (Default: BTRY 1)
FOR BLUEFOR 155-mm ONLY:	List	CHARGE	CHARGE 7 CHARGE 8	Specifies firing charge to be used. Input is optional. (Default: CHARGE 7)
	12 List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.
	IF EXISTING TARGET:			
5	List	PRE-PLANNED TARGET	List of targets previously defined and input to the system.	Defines selection of target. NOTE: Upon selection of target, all parameters describing the target are displayed for review.
6	List	FIRING UNIT	List of BLUEFOR or OPFOR firing units identified in system data base.	Defines selection of unit to execute Fire Mission.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 24 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
7	List	WEAPON	For BLUEFOR: For OPFOR: 105-mm 122-mm HOWITZER 107-mm 152-mm HOWITZER 155-mm 152-mm GUN/HOWITZER 175-mm B"	Defines selection of weapon to be fired.
8	List	SHELL	HE HERAP HC ILLUM WP TCM DPICM FASCAM CLGP	Defines selection of shell to be used. Input is optional. (Default: HE)
9	List	FUSE	PD DELAY VT	Specifies selection of fuse to be used. Input is optional. (Default: PD)
10	List	ROUNDS	BTRY 1 BN 1 BTRY 2 BN 2 BTRY 3 BN 3 BTRY 4 BN 4 BTRY 5 BN 5 BTRY 6 BN 6 BTRY 7 BN 7 BTRY 8 BN 8 BTRY 9 BN 9 BTRY 10 BN 10	Specifies number of rounds to be delivered. Input is optional. (Default: BTRY 1)
FOR BLUEFOR 155-mm ONLY:	List	CHARGE	CHARGE 7 CHARGE 8	Specifies firing charge to be used. Input is optional. (Default: CHARGE 7)

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 25 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
11	List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.
<u>IF DEFINE TARGET SERIES:</u>				
2	List	FORCE	BLUEFOR OPFOR	Defines menu display options.
3	List	ACTION	NEW TARGET SERIES EDIT TARGET SERIES CANCEL TARGET SERIES	
<u>IF NEW TARGET SERIES:</u>				
4	List	SELECT SERIES	111 112 113 114 115 116 117 118 119 1110	Specifies target series to be executed in accordance with operator input TIME.
5	Alpha/ Numeric Entry	TIME	DD MON YR : (current date displayed for edit (if required) followed by 4 spaces to be filled in with HH:MM values)	Specifies execution date and time for target series.
6	List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 26 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
<u>IF EDIT TARGET SERIES:</u>				
4	List	SELECT SERIES	H1 H2 H3 H4 H5 H6 H7 H8 H9 H10	Specifies target series for which TIME shall be updated. Upon selection of target series, the previously entered date and time are displayed for review/update.
5	Alpha/Numeric Entry	UPDATE TIME	Previously entered date and time.	Allows operator to update date/time of execution for target series.
6	List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.
<u>IF CANCEL TARGET SERIES:</u>				
4	List	SELECT SERIES	H1 H2 H3 H4 H5 H6 H7 H8 H9 H10	Defines selection of target series to be cancelled.
5	List	----	IGNORE REPEAT DONE	Specifies manner of entry completion.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 27 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
<u>IF EXECUTE ON-CALL MISSION:</u>				
2	List	FORCE	BUILD FOR OPTOR	Defines menu display options.
3	List	ON CALL MISSIONS	List of on-call fire missions identified in system data base.	Defines selection of on-call fire mission to be executed.
4	List	SCHEDULE MISSION EXECUTION	TIME TARGET SERIES	Defines menu display options.
<u>IF TIME:</u>				
5	Alpha/ Numeric Entry	TIME	DD MON YR : (current date displayed for edit (if required) followed by 4 spaces to be filled in with HH:MM values)	Specifies execution date and time of fire mission.
6	List	-----	IGNORE REPEAT DONE	Specifies manner of entry completion.
<u>IF TARGET SERIES:</u>				
5	List	SELECT SERIES	111 112 113 114 115 116 117 118 119 1110	Specifies execution time is in accordance with particular target series.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 28 OF 29)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
6	Alpha/ Numeric Entry	OFFSET TIME	3 spaces to be filled in from Alpha/Numeric pad.	Specifies target series offset time for mission (0 up to 59 minutes).
7	List	----	IGNORE REPEAT DONE .	Specifies manner of entry completion.

FIGURE 1.1 MENU: INDIRECT FIRE (PAGE 29 OF 29)

1	1 0	2 0	3 0	4 0	5 0	6 0	7 0	8 0
PRE-PLANNED TARGETS				2-123		DD MMM YY HH:MM		
FORCE BLUEFOR OR OPFOR		LOCATION AANNNNNNNN						
TGTNR AANNN	TGT LOC AANNNNNNNN	TGTNR AANNN	TGT LOC AANNNNNNNN	TGTNR AANNN	TGT LOC AANNNNNNNN	TGTNR AANNN	TGT LOC AANNNNNNNN	
:	:	:	:	:	:	:	:	:

FIGURE 1.2 PRE-PLANNED TARGETS (PAGE 1 OF 2)

TITLE: Pre-Planned Targets

DISPLAY TYPE: Tabular

CONTENT:

Column Heading

Description

FORCE

Force for which target list is requested.

LOCATION

If target list is requested for display in location proximity order, the UTM coordinate specified by the operator for use in the ordering sequence of the list.

TGTNR

Target number of target.

TGT LOC

UTM coordinate of target.

DISPLAY CRITERIA:

TIME

The display shall contain a list of all BLUEFOR or OPFOR targets identified in the system data base at an operator specified exercise time or, as a default, to the exercise time as displayed on the Tactical Display at the time of the display request.

NOTE: The operator specified time must be a time which is included in the current exercise segment.

FORCE

The operator specifies whether the display is for BLUEFOR or OPFOR.

SEQUENCE

The operator specifies the sequencing order in which the target list is to be presented (i.e., either alphanumeric or location proximity order). If the display is to be provided in location proximity order, the operator specifies the UTM coordinate upon which the list sequencing order shall be based.

FIGURE 1.2 PRE-PLANNED TARGETS (PAGE 2 OF 2)

SCIENCE APPLICATIONS, INC.

1.2 Groups Of Targets

The operator shall have the capability of identifying up to 50 groups of targets with each group consisting of up to 10 targets selected from targets on the pre-planned target list. For each group of targets, the operator shall specify FORCE, GROUP DESIGNATION, and TARGETS belonging to the group as defined below.

Field	Valid Operator Input
FORCE	BLUEFOR OPFOR
GROUP DESIGNATION	3 character (alpha- numeric) designation.
TARGETS	Up to 10 targets selected from pre- planned target list.

Groups of targets shall be maintained in the system data base for use in defining fire missions (see discussion below). The operator shall have the capability to delete groups of targets from the data base at any time during real time exercise operations. Input and update of the list of groups of targets shall be accomplished through the INDIRECT FIRE interactive menu (Figure 1.1).

The operator shall be provided the capability to request display of the list of groups of targets maintained in the system data base on the Support Display. The display is detailed in Figure 1.3.

1.3 Fire Mission Items

Up to 500 fire missions may be input by the operator as 'active' (i.e., not yet executed) missions. Active missions shall include SCHEDULED, ON-CALL, and IMMEDIATE missions. Fire mission data input shall be accomplished through use of the INDIRECT FIRE interactive menu (Figure 1.1).

For each SCHEDULED mission, the operator shall specify FORCE, TARGET, FIRING UNIT, WEAPON, SHELL, FUSE, # ROUNDS, and MISSION EXECUTION TIME as defined below.

Field	Valid Operator Input
FORCE	BLUEFOR OPFOR
TARGET	New target, new group of targets or target



1	1 0	2 0	3 0	4 0	5 0	6 0	7 0	8 0	
GROUP OF TARGETS				2-123		DD MMM YY HH:MM			
FORCE BLUEFOR OR OPFOR									
GROUP DESIG ANN									
TGTNR AANN		TGT LOC AANNNNNNNN		TGTNR AANN		TGT LOC AANNNNNNNN		TGTNR AANN	
:		:		:		:		:	
:		:		:		:		:	

FIGURE 1.3 GROUPS OF TARGETS (PAGE 1 OF 2)

TITLE: Groups of Targets

DISPLAY TYPE: Tabular

CONTENT:

Column Heading

Description

FORCE

Force for which list is requested.

GROUP DESIG

Group designation for group of targets.

TGTNR

Target number of target(s) belonging to group.

TGT LOC

UTM coordinate(s) of targets belonging to group.

DISPLAY CRITERIA:

TIME

The display shall contain a list of all BLUEFOR or OPFOR groups of targets identified in the system data base at an operator specified exercise time, or as a default, to the exercise time as displayed on the Tactical Display at the time of the display request.

NOTE: The operator specified time must be a time which is included in the current exercise segment.

FORCE

The operator specifies whether the display is for OPFOR or BLUEFOR. The display items are alphanumerically ordered in accordance with the group designations. The target number and location for each target belonging to a group of targets are presented in a list format beneath the associated group designation.

SCIENCE APPLICATIONS, INC.

or group of targets
selected from pre-
planned target list.
Note: If a new target
or new group of targets
is specified, that tar-
get or group shall be
automatically added to
the pre-planned target/
group list maintained
in the system data base.

FIRING UNIT

Selection of firing
unit identified in
system data base.

WEAPON

BLUEFOR: OPFOR:
105-mm 122-mm Howitzer
107-mm 152-mm Howitzer
155-mm 152-mm Gun/Howitzer
175-mm
8"

SHELL

HE ICM
HERAP DPICM
HC FASCAM
ILLUM CLGP
WP

FUSE

PD
DELAY
VT

ROUNDS

BTRY 1 BN 1
:
:
:
BTRY 10 BN 10

TIME

Date/Time or
H1
H2
.. ± up to 59 minutes
.. (see discussion of
H10 Target Series)

In addition, the operator shall identify the charge (CHARGE 7 or 8) to be used for each mission using the BLUEFOR 155-mm weapon.

SCHEDULED missions may be cancelled at any point up until 60 seconds prior to the operator specified execution time. In addition, the operator shall have the capability to modify/update fire mission data fields (e.g., WEAPON, SHELL, etc.) at any time up until 60 seconds prior to mission execution.



SCIENCE APPLICATIONS, INC.

For each SCHEDULED mission, the system shall perform a range check on the firer to impact point five minutes prior to mission execution time (as permitted in accordance with time of mission data input). In the event the firing unit is found to be out of range of its target, an alert which shall identify the mission and its scheduled execution time shall be output for operator action.

- Valid ranges for each of the BLUEFOR and OPFOR weapon types shall be as follows:

Weapon	Maximum Effective Range (Meters)
105-mm (M101A1)	11,000
107-mm (M30)	5,650
155-mm (M109A1)	14,800 (CHARGE 7) 18,100 (CHARGE 8)
175-mm (M107)	32,800
8" (M110A1)	20,600
122-mm HOW (D-30)	15,300
152-mm HOW (D-1)	12,400
152-mm GUN/HOW (D-20)	18,500

In the event a SCHEDULED mission is determined to be out of range 5 minutes prior to its scheduled execution time, the system shall recheck that range 60 seconds prior to execution time and, if at that point the firing unit is found to be out of range of its target, than a second alert shall be output and no casualty assessment or indirect firing vector shall be provided.

For all missions determined to be within valid range, and using SHELL types HE, HERAP, WP, ICM and DPICM, the software shall perform casualty assessment and provide an alert which shall identify the mission, its scheduled execution time, recommended instrumented casualties, recommended uninstrumented personnel casualties (standing, prone, and in foxhole), and recommended uninstrumented vehicle casualties (tanks, APCs, and wheeled vehicles). The IFCAS alert shall be displayed 30 seconds prior to scheduled mission execution time and shall be formatted as follows:

```
[Time] : [Firing Unit] : [Weapon] : [Shell/Fz] : [Tgt#/Coord] :
[Time of Execution]
INSTRUMENTED KILLS : [Player ID]; [Player ID] . . .
UNINSTRUMENTED PERS CAS : STAND [NN%] PROT [NN%]
UNINSTRUMENTED VEH CAS : TNK [NN%] APC [NN%] WHEEL [NN%]
```

e.g.,

```
10:24:30 : A/4-37 : 155MM : ILLUM/PD : AJ002/NJ34566139 : 10:25:00
INSTRUMENTED KILLS : BTNK:A05;BTOW:A03
UNINSTRUMENTED PERS CAS : STAND 5% PRONE 0% PROT 0%
UNINSTRUMENTED VEH CAS : TNK 0% APC 3% WHEEL 5%
```



SCIENCE APPLICATIONS, INC.

For all missions determined to be within valid range and using SHELL types HC, ILLUM, FASCAM or CLGP, no casualty assessment shall be performed, but an alert identifying the mission and its scheduled execution time shall be provided 30 seconds prior to scheduled mission execution.

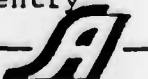
An indirect firing vector shall be displayed at mission execution time for ALL missions determined to be within valid range. The vector shall originate from the location of the firing unit with the weapon effects area represented by a rectangle centered on the impact point. The target number shall be displayed in the rectangle. (Note: In the event a target number is not provided for an IMMEDIATE mission, then the UTM coordinate of the impact point shall be displayed in the rectangle.) The symbol shall be displayed in the color of the firer. Mortar fire shall be displayed as a dashed rectangle rather than the solid lined rectangle used for artillery. Smoke missions shall be displayed as a dotted rectangle. Indirect fire symbols shall be displayed for 30 seconds.

For each ON-CALL or IMMEDIATE mission, the operator shall specify FORCE, TARGET, FIRING UNIT, WEAPON, SHELL, FUSE, # ROUNDS, and CHARGE (as applicable). NOTE: For an IMMEDIATE mission, the operator shall have the option of identifying the target by impact point only, rather than by target number and impact point as shall be required for all SCHEDULED and ON-CALL missions.

The ON-CALL mission shall remain in an ON-CALL status until it is either cancelled or assigned an execution time (in which case it becomes an active SCHEDULED mission).

The execution time for the IMMEDIATE mission is automatically set by software. Range checks, casualty assessments, and firing vector display processing for IMMEDIATE missions shall be essentially as described above for the SCHEDULED mission with the only difference being the timing of the processing. Specifically, the range check shall be performed immediately following mission data input and, in the event the firing unit to target range is found to be valid, then casualty assessment is immediately performed (as applicable), an alert is output, and the mission is 'executed' 30 seconds after output of the alert. Again, an indirect firing vector shall be displayed at mission execution time. For an out of range mission, no casualty assessment is performed, but rather an alert is output stating the mission is out of range.

In addition, any time a target number is not specified for an IMMEDIATE mission, the system shall check to see if any target in the pre-planned target list is within 500 meters of the impact point specified for the mission and shall include its findings (if any) in the FIRE SUPPORT LOG entry for that mission.



SCIENCE APPLICATIONS, INC.

Once a mission is executed, it shall be assigned an "EXECUTED" status awaiting operator input of fire mission results. At this point, the operator shall use the FIRE MISSION RESULT interactive menu (Figure 1.4) to specify mission effects. Mission effects may be identified as being either NULL or POSITIVE. POSITIVE effects shall be defined as INSTRUMENTED and UNINSTRUMENTED casualties as defined below.

Field	Valid Operator Input
INSTRUMENTED CASUALTIES	Selection of casualties resulting from controller gun firing events.
UNINSTRUMENTED CASUALTIES:	
TANK	# lost
APC	..
CARR,MORT	..
CARR,CP	..
AD,MANPAD	..
AD(T)	..
AD(SP)	..
ARTY(T)	..
ARTY(SP)	..
TRK,LT	..
TRK,MED	..
TRK,HVY	..
WPN,AT	..
WPN,AUTO	..
PERSONNEL	#WIA #KIA

Missions for which results have been entered shall become FIRE MISSION LOG items. Up to 1600 executed missions may be included in the FIRE MISSION LOG over the 14 day exercise. Within the log, missions shall be ordered by execution time. The FIRE MISSION LOG is detailed in Figure 1.5.

1.4 Target Series

Target Series may be established through use of variables H1-H10 offset by \pm up to 59 minutes. As previously noted in this discussion, the execution time for a SCHEDULED mission may be set as $H(N) \pm$ up to 59 minutes. Having defined a Target Series in the data base, the operator may at any point set the value (time) of $H(N)$. Once a Target Series time is defined, the system shall process all affected missions accordingly. In addition, the operator shall have the capability to modify/update the time entered for



DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION																														
1	List	FORCE	BLUEFOR OPFOR	Define's menu display options.																														
2	List	EFFECT	NULL POSITIVE	Defines selection of result of fire mission.																														
IF NULL:																																		
3	List	FIRE MISSIONS	List of fired missions	Defines selection of fire mission with no effects.																														
4	List	----	IGNORE REPEAT DONE	Defines manner of entry completion.																														
IF POSITIVE:																																		
3	List	FIRE MISSIONS	List of fired missions	Defines selection of fire mission for which effects are to be entered.																														
4	List	INSTRUMENTED CASUALTIES	List of instrumented casualties resulting from controller gun firing events.	Defines selection of instrumented casualties to be attributed to the mission.																														
5	List	UNINSTRUMENTED VEHICLE CASUALTIES	<table><tr><th>TYPE</th><th>#LOST</th></tr><tr><td>TANK</td><td>--</td></tr><tr><td>APC</td><td>--</td></tr><tr><td>CARR, MORT</td><td>--</td></tr><tr><td>CARR, CP</td><td>--</td></tr><tr><td>AD, MANPAD</td><td>--</td></tr><tr><td>AD(T)</td><td>--</td></tr><tr><td>AD(SP)</td><td>--</td></tr><tr><td>ARTY(T)</td><td>--</td></tr><tr><td>ARTY(SP)</td><td>--</td></tr><tr><td>TRK, LT</td><td>--</td></tr><tr><td>TRK, MED</td><td>--</td></tr><tr><td>TRK, HVY</td><td>--</td></tr><tr><td>WPN,AT</td><td>--</td></tr><tr><td>WPN,AUTO</td><td>--</td></tr></table>	TYPE	#LOST	TANK	--	APC	--	CARR, MORT	--	CARR, CP	--	AD, MANPAD	--	AD(T)	--	AD(SP)	--	ARTY(T)	--	ARTY(SP)	--	TRK, LT	--	TRK, MED	--	TRK, HVY	--	WPN,AT	--	WPN,AUTO	--	Allows operator to specify type and number of vehicle casualties to be attributed to mission. Input is optional.
TYPE	#LOST																																	
TANK	--																																	
APC	--																																	
CARR, MORT	--																																	
CARR, CP	--																																	
AD, MANPAD	--																																	
AD(T)	--																																	
AD(SP)	--																																	
ARTY(T)	--																																	
ARTY(SP)	--																																	
TRK, LT	--																																	
TRK, MED	--																																	
TRK, HVY	--																																	
WPN,AT	--																																	
WPN,AUTO	--																																	

FIGURE 1.4 MENU: FIRE MISSION RESULT (PAGE 1 OF 2)

DISPLAY GROUP	TYPE	TITLE	CONTENT	DESCRIPTION
6	List	UNINSTRUMENTED PERSONNEL CASUALTIES	<div>TYPE</div> <div>WIA</div> <div>KIA</div> <div>#</div> <div>--</div> <div>--</div>	Allows operator to specify number of personnel casualties to be attributed to mission. Input is optional.
7	List	----	<div>IGNORE</div> <div>REPEAT</div> <div>DONE</div>	Specifies manner of entry completion.

FIGURE 1.4 MENU: FIRE MISSION RESULT (PAGE 2 OF 2)

1	1	2	3	4	5	6	7	8
0	0	0	0	0	0	0	0	0

FIRE SUPPORT LOG

2-123 DD MM YY HH:MM - DD MM YY HH:MM

TIME TGTNR TGT LOC FIRING UNIT SHELL/FUSE ROUNDS

DD HH:MM AANN AANNNNNNNN XX/NN-NN AAAAAA/AA NNN

EFFECT: WIA:NN KIA:NN (VEHICLE N) (VEHICLE N) (VEHICLE N) (VEHICLE N)

INSTRUMENTED LOSS: PLAYER ID PLAYER ID PLAYER ID

FIGURE 1.5 FIRE SUPPORT LOG
(PAGE 1 OF 3)

TITLE: Fire Support Log

DISPLAY TYPE: Tabular

CONTENT:

Column Heading

Description

TIME

Time of mission execution.

TGTNR (IMMED)

Target number of target, "IMMED" if immediate mission with no target number assigned, or group designation if applicable.

TGT LOC

UTM grid location for mission effects/delivery.

FIRING UNIT

Name designation of unit executing mission.

SHELL/FUSE

Type of shell/fuse combination used.

ROUNDS

Number of rounds of ammunition expended in firing.

EFFECT

Description of mission effects for uninstrumented personnel and vehicles (by type), and instrumented losses by player identification.

DISPLAY CRITERIA:

TIME

All data on fire support missions shall be displayed for the entire history at an operator specified time range or, as a default, since the beginning of the history to the exercise time as displayed on the Tactical Display at the time of the display request.

The fixed portion of this format occupies one line per entry with effects on subsequent lines, with uninstrumented losses followed by instrumented losses by ID, for as many lines as necessary.

In the event an immediate mission is input by the operator with no target number and the system determines that there is a target(s) on the pre-planned target list which is

FIGURE 1.5 FIRE SUPPORT LOG
(PAGE 2 OF 3)

within 500 meters of the impact point specified for the immediate mission, an additional line shall appear in the log entry for that mission as follows: TARGET(S) WITHIN 500 METERS: AANN. NOTE: Maximum number of targets included in this line shall be 10.

In the event a mission is out of range and therefore not "executed", MISSION OUT OF RANGE shall appear as the mission effect.

FORCE

The operator specifies whether the display is for the BLUEFOR or OPFOR Fire Support Log.

FIGURE 1.5 FIRE SUPPORT LOG
(PAGE 3 of 3)

SCIENCE APPLICATIONS, INC.

Target Series or cancel a Target Series (thereby causing all missions belonging to the Target Series to be deleted from the active mission file). The capability to define and update a Target Series shall be provided in the INDIRECT FIRE interactive menu (Figure 1.1).



SCIENCE APPLICATIONS, INC.

SECTION 2

INDIRECT FIRE AND CASUALTY ASSESSMENT PROCESSOR

(IFCASS)



SCIENCE APPLICATIONS, INC.

2.0 INDIRECT FIRE AND CASUALTY ASSESSMENT PROCESSOR (IFCASS)

2.1 Module Synopsis

The IFCASS subprogram will monitor the IFCAS data structures updated by IDCHAN. It will look at each fire mission item and determine whether it is time for the mission to be executed. Upon execution, a casualty recommendation is sent to the IDC for processing by a military controller. IFCASS will provide out of range alerts for those missions whose firing unit is out of range of the designated targets.

2.2 Routine-level Synopsis

Program Description

IFCASS assesses the casualties of simulated fire missions. It is activated every ten seconds and, when activated, scans the Fire Mission Table seeking missions that are:

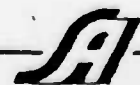
1. within 300 seconds of execution,
2. within 60 seconds of execution,
3. within 30 seconds of execution.

If a mission is within 300 seconds of execution or if the mission is within 60 seconds of execution, range alerts are sent when the target(s) of the mission are out-of-range. If a mission is within 30 seconds of execution, IFCASS will again send range alerts for out-of-range target(s). This time, though, processing will be done if all targets are in range. This processing includes casualty assessments and message formatting. Results include:

1. IDC-to-CC IFCAS messages,
2. updated IFCAS arrays in shared memory.

IFCASS is comprised of the following routines:

- o IFCASS - Root
- o IFCONT - Checks system status



SCIENCE APPLICATIONS, INC.

- o IFDIST - Finds distances
- o IFDNGG - Sends disengagement messages
- o IFENGG - Sends engagement messages
- o IFFLNK - Gets value of link field in Fire Mission Table
- o IFHLIS - Inserts items in history list
- o IFINCL - Inserts items in circular list
- o IFINIT - Initializes operating environment
- o IFL300 - Deals with missions 300 seconds from execution
- o IFLE30 - Deals with missions 30 seconds from execution
- o IFLE60 - Deals with missions 60 seconds from execution
- o IFLKUP - Finds indices into Weapon Effects Table
- o IFPROC - Main processing subroutine
- o IFQIDH - Queues items to the CC (IDCHAN)
- o IFRECO - Produces casualty recommendations
- o IFTYPE - Finds player type
- o IFWEAP - Initializes Weapon Effects Table

The IFCASS hierarchy chart is illustrated in Figure 2.1.



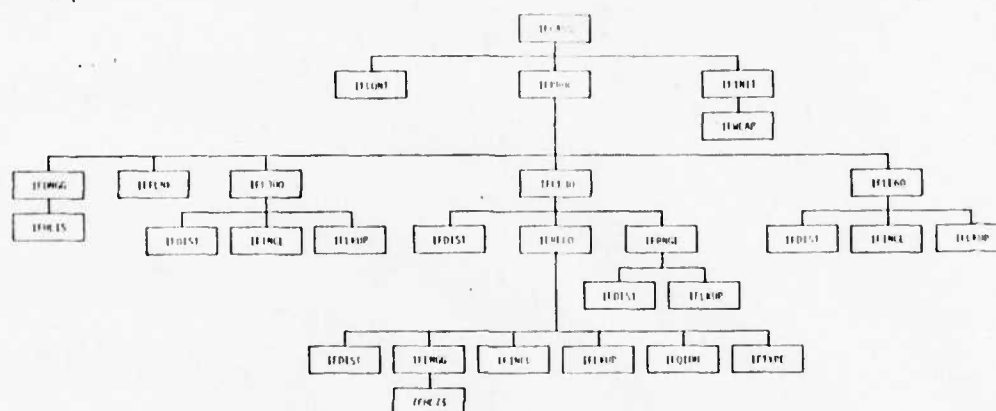


FIGURE 2.1 IFCASS HIERARCHY CHART

SCIENCE APPLICATIONS, INC.

2.2.1 PROGRAM IFCASS -

"IFCASS" assesses casualties of indirect fire.

2.2.1.1 Input -

Input includes information from the Weapon Effects Table, Fire Mission Table, Target Group Table, and the Preplanned Target Table.

2.2.1.2 Process -

IFCASS produces a casualty recommendation based on the range of target, maximum range of weapon, and other considerations. In addition, IFCASS (1) alters the status of items in the Fire Mission Table, (2) produces range alert messages based on the time of execution of a Fire Mission and the range of the target, and (3) puts targets into the Nearest Target Table.

2.2.1.3 Output -

Output includes the IFCAS casualty message, range alerts, and entries in the Nearest Target Table.

2.2.2 LOGICAL*4 FUNCTION IFCONT -

"IFCONT" checks the CC global system status for IFCASS.

2.2.2.1 Input -

Input includes the value of the global system status flag.



SCIENCE APPLICATIONS, INC.

2.2.2.2 Process -

"IFCONT" checks the global termination flag.

2.2.2.3 Output -

Output includes the logical flag indicating global system state.

2.2.3 INTEGER*4 FUNCTION IFDIST -

"IFDIST" computes the distance between two points.

2.2.3.1 Input -

Input includes the coordinates of the two points in pixometers.

2.2.3.2 Process -

The Pythagorean Theorem is used to compute a distance.

2.2.3.3 Output -

Output includes the distance between the two points in meters.

2.2.4 SUBROUTINE IFDNGG -

"IFDNGG" sends disengagement messages to FRMTR.



SCIENCE APPLICATIONS, INC.

2.2.4.1 Input -

There are no inputs to this routine.

2.2.4.2 Process -

Whenever it finds a 30-second old entry in the Engagement Table, "IFDNGG" formats a disengagement message and sends it to FRMTR. After doing so, this subroutine zeros the Engagement Table entry and updates the "next-available slot" pointer.

2.2.4.3 Output -

Output includes the disengagement messages.

2.2.5 SUBROUTINE IFENGG -

"IFENGG" sends engagement and disengagement messages to FRMTR.

2.2.5.1 Input -

Input includes (1) the address of an entry in the Fire Mission Table, and (2) the target coordinates.

2.2.5.2 Process -

"IFENGG" builds an engagement message and sends it to FRMTR. Then, it puts an entry into a local copy of the Engagement Table. If the table is full when an entry is to be added, then (1) the oldest entry in the table will be removed, and (2) a disengagement message corresponding to the entry will be sent.



SCIENCE APPLICATIONS, INC.

2.2.5.3 Output -

Output includes (1) the entries added to the local Engagement Table, and (2) the engagement and disengagement messages.

2.2.6 INTEGER*4 FUNCTION IFFLNK -

"IFFLNK" gets the value of the Fire Mission Table link field (node).

2.2.6.1 Input -

Input includes the address of the Fire Mission Table entry.

2.2.6.2 Process -

"IFFLNK" gets the link field value of the Fire Mission item.

2.2.6.3 Output -

Output includes the value of link field.

2.2.7 SUBROUTINE IFHLIS -

"IFHLIS" puts an engagement or disengagement message into the history list.

2.2.7.1 Input -

Input includes the message buffer.



SCIENCE APPLICATIONS, INC.

2.2.7.2 Process -

"IFHLIS" inserts a message into the history list, starting at the "next-available word". Then, FRMTR is dispatched to do additional processing.

2.2.7.3 Output -

A message will be output to the history list.

2.2.8 SUBROUTINE IFINCL -

"IFINCL" inserts a message into the CC Intermediate List.

2.2.8.1 Input -

Input includes both the message buffer and the message length.

2.2.8.2 Process -

"IFINCL" performs all indexing and fill operations required to move the message words into the next-available slot (which doesn't cross a block boundary) in the CC Intermediate List.

2.2.8.3 Output -

Output includes the message and filler words in the CC Intermediate List.



SCIENCE APPLICATIONS, INC.

2.2.9 SUBROUTINE IFINIT -

"IFINIT" is the initialization routine for IFCASS.

2.2.9.1 Input -

Input to this routine includes the shared memory event flag clusters.

2.2.9.2 Process -

"IFINIT" initializes the operating environment for IFCASS. It associates the event flag clusters, determines the process ID, gets the history number, and activates a WAKEUP call. "IFINIT" also calls "IFWEAP" to initialize the Weapon Effects Table.

2.2.9.3 Output -

Output includes the initialized Weapon Effects Table.

2.2.10 SUBROUTINE IFL300 -

"IFL300" deals with Fire Mission items that are within 300 seconds of execution.

2.2.10.1 Input -

Input includes the address of the node that is to be executed.

2.2.10.2 Process -

"IFL300" determines whether target(s) are in range. If they are not, it issues an alert. In either case, "IFL300" marks the Fire Mission item as "active."



SCIENCE APPLICATIONS, INC.

2.2.10.3 Output -

If applicable, output includes the five-minute out-of-range alerts.

2.2.11 SUBROUTINE IFLE30 -

"IFLE30" deals with Fire Mission items that are within 30 seconds of execution.

2.2.11.1 Input -

Input includes the address of the node that is to be executed.

2.2.11.2 Process -

"IFLE30" determines whether target(s) are in range. If so, it (1) performs a casualty recommendation against them, and (2) marks the Fire Mission item "active."

2.2.11.3 Output -

Output includes the casualty recommendations.

2.2.12 SUBROUTINE IFLE60 -

"IFLE60" deals with fire mission items that are within 60 seconds of execution.

2.2.12.1 Input -

Input includes the address of the node that is to be executed.



SCIENCE APPLICATIONS, INC.

2.2.12.2 Process -

"IFLE60" determines whether target(s) are in range. If not, it issues an alert. In either case, "IFLE60" marks the fire mission item as "active."

2.2.12.3 Output -

Output includes the out-of-range alerts.

2.2.13 SUBROUTINE IFLKUP -

"IFLKUP" provides indices into the Weapon Effects Table.

2.2.13.1 Input -

Input includes (1) the fire mission item's location in the Fire Mission Table, and (2) the distance from firing unit to target.

2.2.13.2 Process -

"IFLKUP" will provide the first 4 coordinates of the cells which contain the casualty percentages for the six player types.

2.2.13.3 Output -

Output includes first four coordinates of the appropriate cells in the Weapon Effects Table.



SCIENCE APPLICATIONS, INC.

2.2.14 SUBROUTINE IFPROC -

"IFPROC" assesses casualties of indirect fire.

2.2.14.1 Input -

Input includes information from the Weapon Effects Table, the Fire Mission Table, the Target Group Table, and the Preplanned Target Table.

2.2.14.2 Process -

A casualty recommendation is produced based on the range of target, the maximum range of weapon, and other considerations. In addition, "IFPROC" (1) alters the status of items in the Fire Mission Table, (2) produces range alert messages based on the time of execution of a Fire Mission and the range of the target, and (3) puts targets into the Nearest Target Table.

2.2.14.3 Output -

Output includes the IFCAS casualty message, the range alerts, and the entries in the Nearest Target Table.

2.2.15 SUBROUTINE IFQIDH -

"IFQIDH" queues messages to the Interactive Display Component Message Handler (IDCHAN).

2.2.15.1 Input -

Input includes the message buffer and the message type.



SCIENCE APPLICATIONS, INC.

2.2.15.2 Process -

"IFQIDH" determines the length of message. It then allocates space in the queue and queues the item to IDCHAN.

2.2.15.3 Output -

Output includes the message which is queued to IDCHAN.

2.2.16 SUBROUTINE IFRECO -

"IFRECO" generates an IFCASS casualty message.

2.2.16.1 Input -

Input includes both the Fire Mission pointer and the target's coordinates.

2.2.16.2 Process -

"IFRECO" determines the effect that a weapon has on players within 150 meters of a shell impact point. This routine also decrements the "not-executed" counter and increments the "executed" counter as appropriate.

2.2.17 INTEGER*4 FUNCTION IFTYPE -

"IFTYPE" determines the player type which, then, is used as an index into the Weapon Effects Table.

2.2.17.1 Input -

Input includes the player's index into the Player Status Vector Table.



SCIENCE APPLICATIONS, INC.

2.2.17.2 Process -

After finding the player's type, "IFTYPE" determines its category for casualty calculations (person standing, person prone, wheeled vehicle, armored personnel carrier, or tank). For certain player types, the category is dependent upon the number of rounds used against the target.

2.2.17.3 Output -

Output includes the category code.

2.2.18 SUBROUTINE IFWEAP -

"IFWEAP" is the initialization routine for the IFCASS Weapon Table.

2.2.18.1 Input -

There are no inputs to this routine.

2.2.18.2 Process -

"IFWEAP" builds the casualty look-up array.

2.2.18.3 Output -

Output includes the completed look-up array.



SCIENCE APPLICATIONS, INC.

ATTACHMENT A

IFCAS DATA STRUCTURES



--- IFCAS Fire Mission Table Item Format:

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	:
EXECUTION TIME (LEAST SIGNIFICANT WORD)															1	
EXECUTION TIME (MOST SIGNIFICANT WORD)															2	
LINK FIELD										STATUS					3	
FIRE MISSION NBR															4	
TARGET #/ GROUP POINTER (SEE TG BIT)													F	TG	5	
FIRING UNIT ID								MISSION TYPE							6	
SHELL TYPE NBR								WEAPON TYPE NBR							7	
ROUNDS								FUSE TYPE NBR							8	
SERIES NBR								CHARGE NBR							9	
<----- UNDEFINED ----->															SERIES OFFSET MINUTES	10
X COORDINATE OF TARGET															11	
Y COORDINATE OF TARGET															12	

---- IFCAS Fire Mission Table Fields

FIELD

VALUES

Status

0 => Free
1 => Active
2 => Executed
3 => Illumination
4 => Out of Range
5 => Timed Out

Fire Mission Number

1-32767

Target Type

0 => Target
1 => Group

Force Indicator

0 => BLUEFOR
1 => OPFOR

Fire Mission Type

1 => Scheduled
2 => On Call
3 => Immediate

Firing Unit ID

1-75

Weapon Type

For BLUEFOR:

1 => 105mm
2 => 107mm
3 => 155mm
4 => 175mm
5 => 8"

For OPFOR:

1 => 122mm Howitzer
2 => 152mm Howitzer
3 => 152mm Gun/Howitzer

Shell Type

1 => HE (Default)
2 => HERAP
3 => HC
4 => ILLUM
5 => WP
6 => ICM
7 => DPICM
8 => FASCAM
9 => CLGP

Fuse Type

1 => PD (Default)
2 => Delay

Rounds

3 => VT

1 => BTRY 1
2 => BTRY 2
3 => BTRY 3
4 => BTRY 4
5 => BTRY 5
6 => BTRY 6
7 => BTRY 7
8 => BTRY 8
9 => BTRY 9
10 => BTRY 10
11 => BN 1
12 => BN 2
13 => BN 3
14 => BN 4
15 => BN 5
16 => BN 6
17 => BN 7
18 => BN 8
19 => BN 9
20 => BN 10

Charge

1 => Charge 7 (Default)
2 => Charge 8

Series Number

0 => Time is used
1 => H1
2 => H2
3 => H3
4 => H4
5 => H5
6 => H6
7 => H7
8 => H8
9 => H9
10 => H10

Series Offset

-59 .LE. Offset .LE. +59

Time

=0 => Offset is Used
>0 => Seconds since 1-1-80

Target Number

AA000-ZZ999

Target X Coordinate

Non-negative integer
(unit = pixometers)

Target Y Coordinate

Non-negative integer
(unit = pixometers)

--- IFCAS Pre-planned Target Table Item Format:

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+																
																1
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+																
																2
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+																
<----- UNDEFINED -----> TARG NO. (HIGHEST BYTE)																3
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+																
																4
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+																
																5
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+																

NOTE: Data Base contains distinct tables organized by force.

----- Pre-Planned Target Table Fields

Field

Values

Target Number

AA000-ZZ999

Target X Coordinate

Non-negative integer
(unit = pixometers)

Target Y Coordinate

Non-negative integer
(unit = pixometers)

--- IFCAS Target Group Table Item Format:

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
GROUP DESIGNATION (FIRST TWO CHARACTERS)															1	
FORCE INDICATOR								GRP DESIG. (3RD CHAR.)							2	
PRE-PLANNED TARGET POINTER (TARGET 1)															3	

○
○
○

PRE-PLANNED TARGET POINTER (TARGET 10)	12
--	----

---- IFCAS Target Group Table Fields

FIELD

Target Group Designator

Force Indicator

VALUES

Alphanumeric

0 => BLUEFOR

1 => OPFOR

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
84

```

16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|           FIRE MISSION NUMBER           | 1
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| 1ST TARGET NUMBER (LOWEST TWO CHARS)    | 2
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| 1ST TARGET NUMBER (NEXT TWO CHARS)      | 3
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|<----- UNDEFINED ----->| 1ST TARG # (5TH CHAR) | 4
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
                                     o
                                     o
                                     o
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| 10TH TARGET NUMBER (LOWEST TWO CHARS)   | 29
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| 10TH TARGET NUMBER (NEXT TWO CHARS)     | 30
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|<----- UNDEFINED ----->| 10TH TARG # (5TH CHAR) | 31
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

----- IFCAS Nearest Target Table Fields

FIELD

VALUES

Fire Mission Number

1-32767

Target Number

AA0000-ZZ999

```

--- Player Status Vector Table Item Format (Players):

```

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
NAME OF PLAYER (BUMPER NUMBER) IN RADIX-50															
STATUS		X UTM COORDINATE IN PIXEMETERS													
0	COM	I/U	Y UTM COORDINATE IN PIXEMETERS												
(UNUSED)		Z UTM COORDINATE IN PIXEMETERS													
0	FORCE	PLAYER TYPE						NEXT HIGHER LINE UNIT							

----- Player Status Vector Table Fields

FIELD -----	VALUES -----
Player Name	3 characters, radix 50
Status	0 => Not Used 1 => Operational 2 => Combat Loss 3 => Non-Combat Loss 4 => Unallocated Controller Kill 5 => Admin Kill 6 => Mechanically Down
I/U	0 => Uninstrumented 1 => Instrumented
Center of Mass	0 => Not included 1 => Included
Player Type	If White: 0 => Field Video 1 => Field Controller 2 => Fire Marker If RED Ground Player: 0 => Undefined 1 => tank (T-72) 2 => BMP 3 => BMP w/ PKT (73MM) 4 => BMP w/ SAGGER 5 => BRDM 6 => BRDM w/ SAGGER 7 => ZSU-23-4 8 => 122 mm SP Howitzer 9 => 155 mm Gun Howitzer 10 => 152 mm Howitzer 11 => Manpack 12 => Manpack w/ SAGGER 13 => Manpack w/ AK (M-16) 14 => Manpack w/ PKT (M-60) 15 => Manpack w/ SA7 (Stinger) 16 => Jammers 17 => Collectors 18 => Truck 19 => ADA - Uninstrumented 20 => SA9 - Uninstrumented 21 => 120 mm Mortar 22 => 180 mm Mortar 23 => Helicopter 24 => Fighter 25 => Bomber

26 => Fighter/Bomber
27 => Reconnaissance

If BLUE Ground Player:

0 => Undefined
1 => tank
2 => APC w/ COAX
3 => APC w/ TOW
4 => Manpack
5 => Manpack w/ Viper
6 => Manpack w/ Dragon
7 => Manpack w/ M-16
8 => Manpack w/ M-60
9 => REDEYE (Stinger)
10 => Vulcan
11 => GSR
12 => Jammers
13 => Collectors
14 => Truck
15 => ADA
16 => 107 mm Mortar
17 => 81 mm Mortar
18 => 175" SP Gun Howitzer
19 => 8" SP Howitzer
20 => 105 mm SP Howitzer
21 => 155 mm SP Howitzer
22 => Helicopter
23 => Fighter
24 => Bomber
25 => Fighter/Bomber
26 => Reconnaissance

Force Designator

0 => Blue
1 => Red
2 => White

--- Weapon Effects Table Item Format:

16		1	
+	+	+	+
	PROBABILITY OF KILL WEAP 1		1
+	+	+	+
	PROBABILITY OF KILL WEAP 2		2
+	+	+	+
	PROBABILITY OF KILL WEAP 3		3
+	+	+	+
	PROBABILITY OF KILL WEAP 4		4
+	+	+	+
	PROBABILITY OF KILL WEAP 5		5
+	+	+	+
	PROBABILITY OF KILL WEAP 1		6
+	+	+	+
	PROBABILITY OF KILL WEAP 2		7
+	+	+	+
	PROBABILITY OF KILL WEAP 3		8
+	+	+	+
	PROBABILITY OF KILL WEAP 4		9
+	+	+	+
	PROBABILITY OF KILL WEAP 5		10
+	+	+	+
			RANGE
	.		
	.		
	.		
+	+	+	+
	PROBABILITY OF KILL WEAP 4		69
+	+	+	+
	PROBABILITY OF KILL WEAP 5		70
+	+	+	+
			ROUNDS
	.		
	.		
	.		
+	+	+	+
	PROBABILITY OF KILL WEAP 4		559
+	+	+	+
	PROBABILITY OF KILL WEAP 5		560
+	+	+	+
			PLAYER TYPE
	.		
	.		
	.		
+	+	+	+
	PROBABILITY OF KILL WEAP 4		3359
+	+	+	+
	PROBABILITY OF KILL WEAP 5		3360
+	+	+	+

--- Target Engagement Vector Table Item Format:

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
TARGET NUMBER CHARACTERS 1-3 (RAD50)																1
TARGET NUMBER CHARACTERS 2-6 (RAD50)																2
FIRER X UTM COORDINATE IN PIXEMETERS												SHL WEP FOR				3
FIRER Y UTM COORDINATE IN PIXEMETERS												-0-				4
TARGET X UTM COORDINATE IN PIXEMETERS												-0-				5
TARGET Y UTM COORDINATE IN PIXEMETERS												-0-				6

----- Target Engagement Vector Table Fields

FIELD

VALUES

Target Number

AA000-ZZ999

Force

0 => BLUEFOR
1 => OPFOR

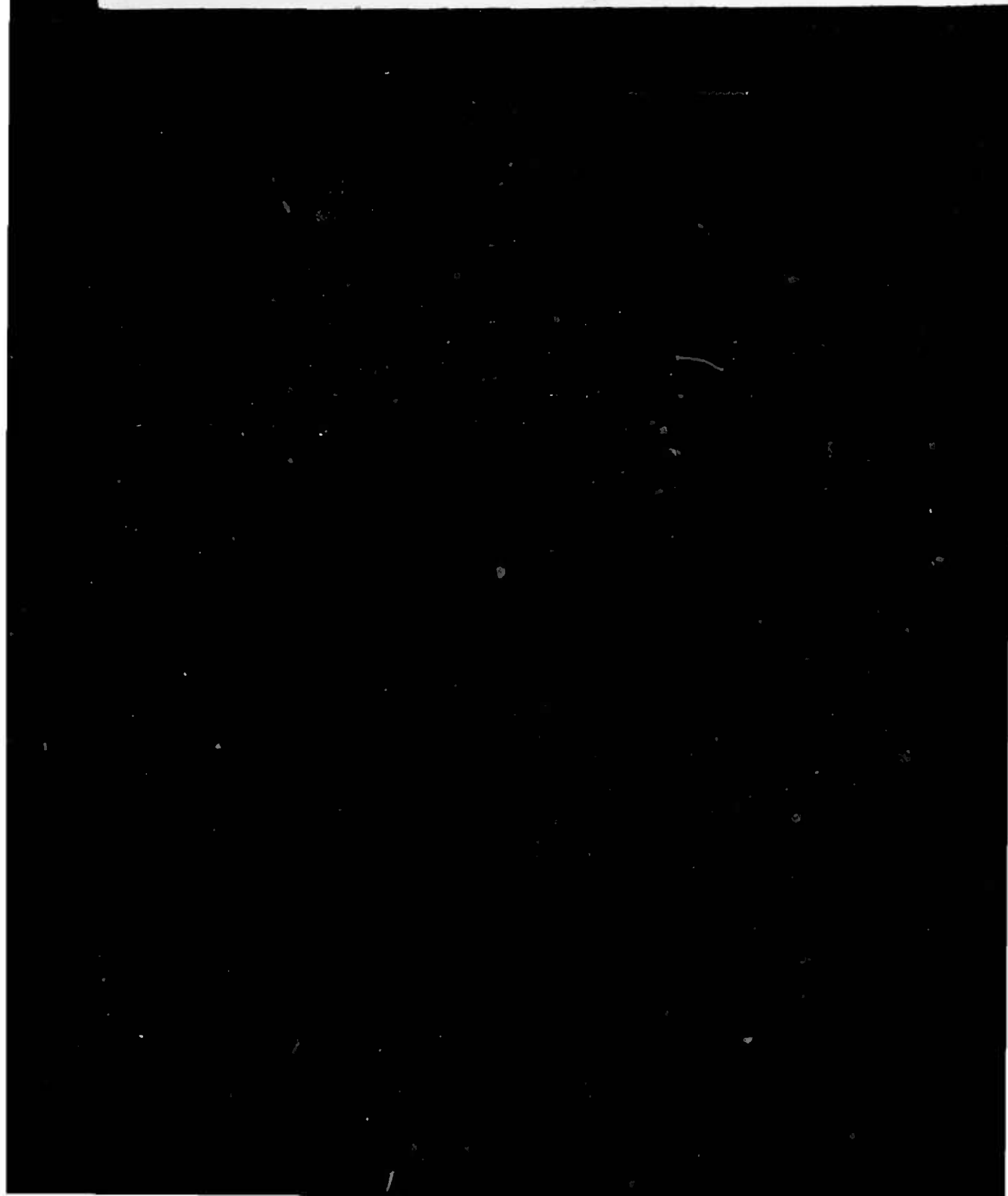
Weapon

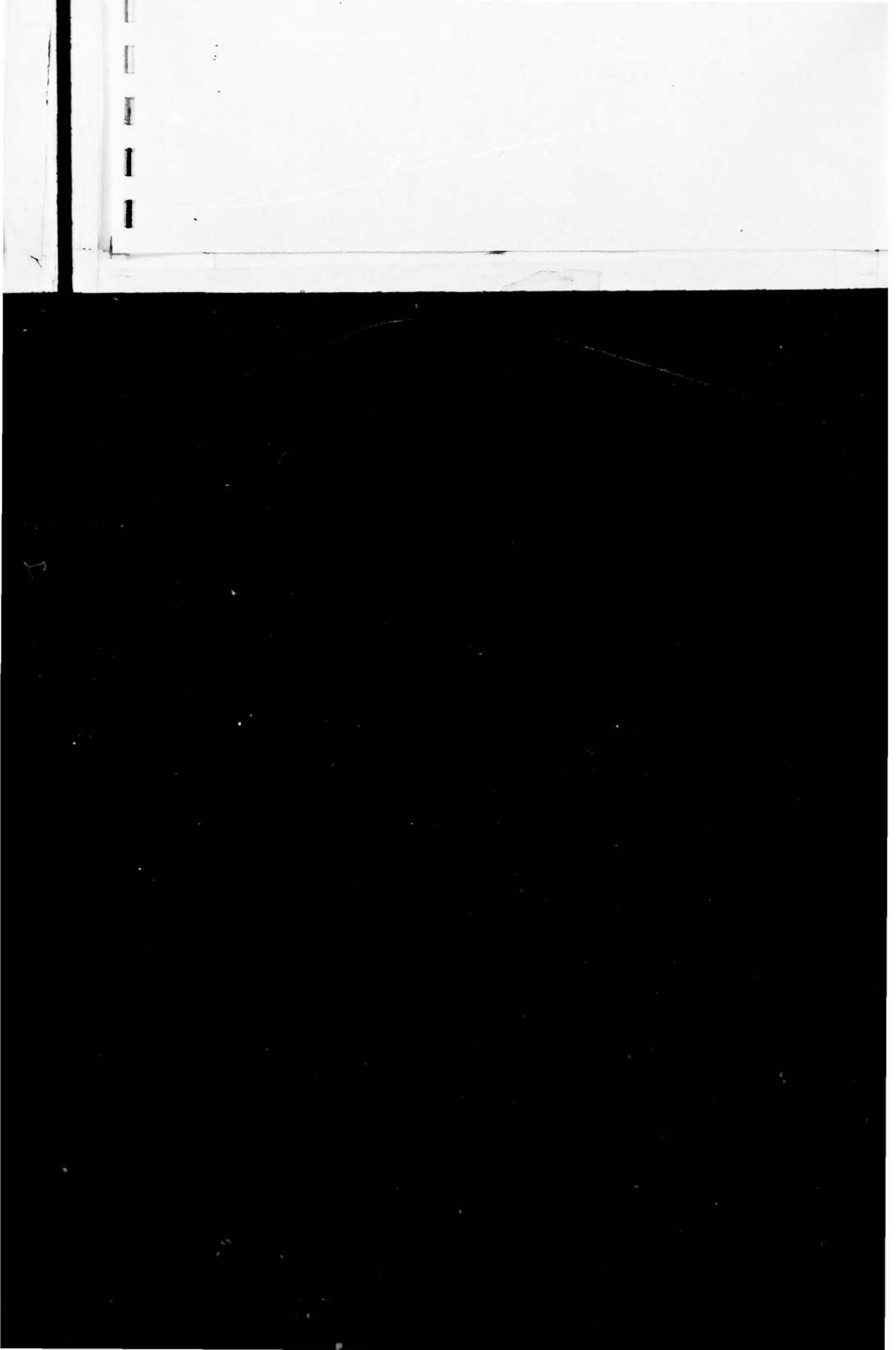
0 => Not Mortar
1 => Mortar

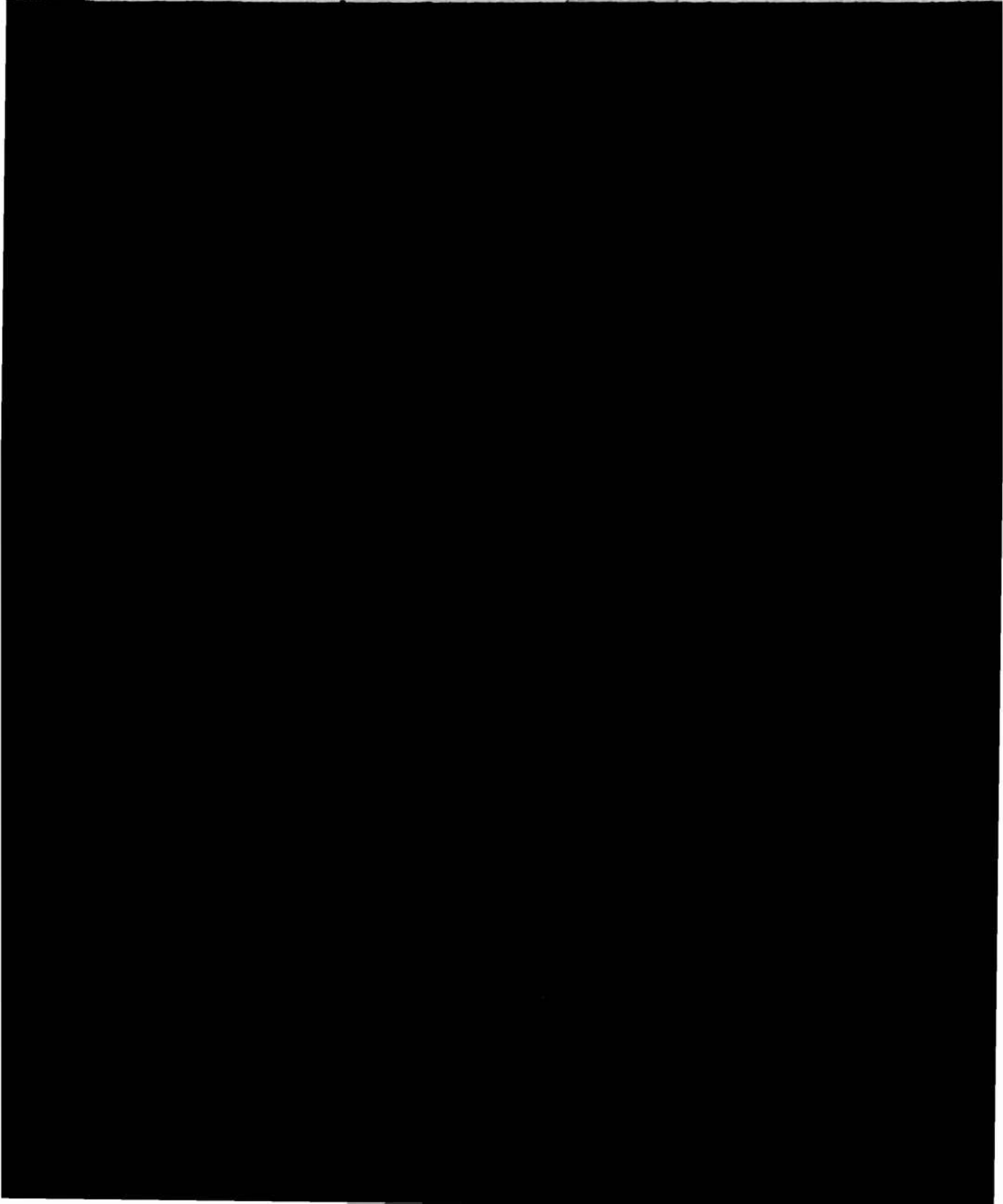
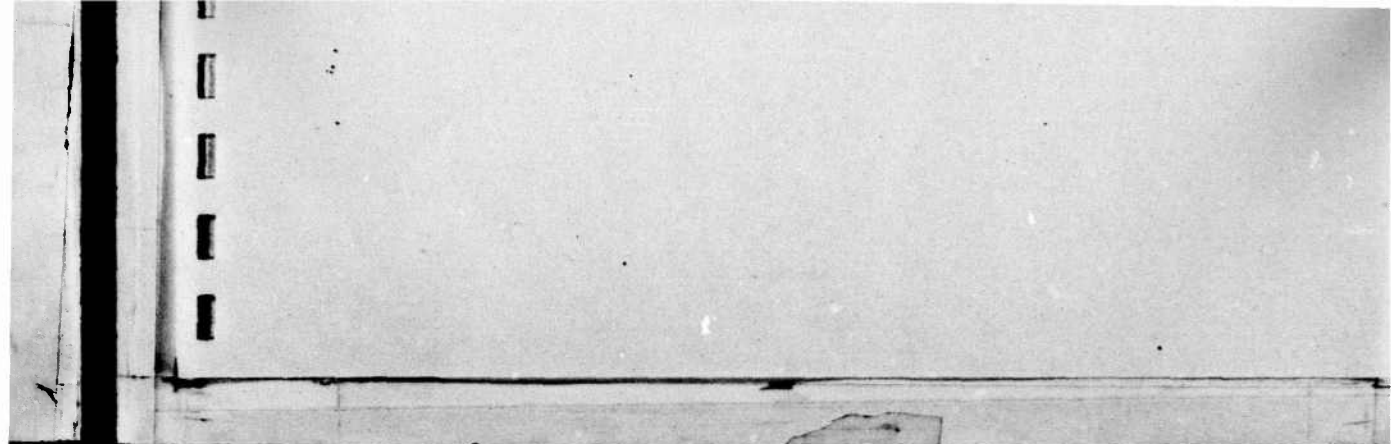
Shell

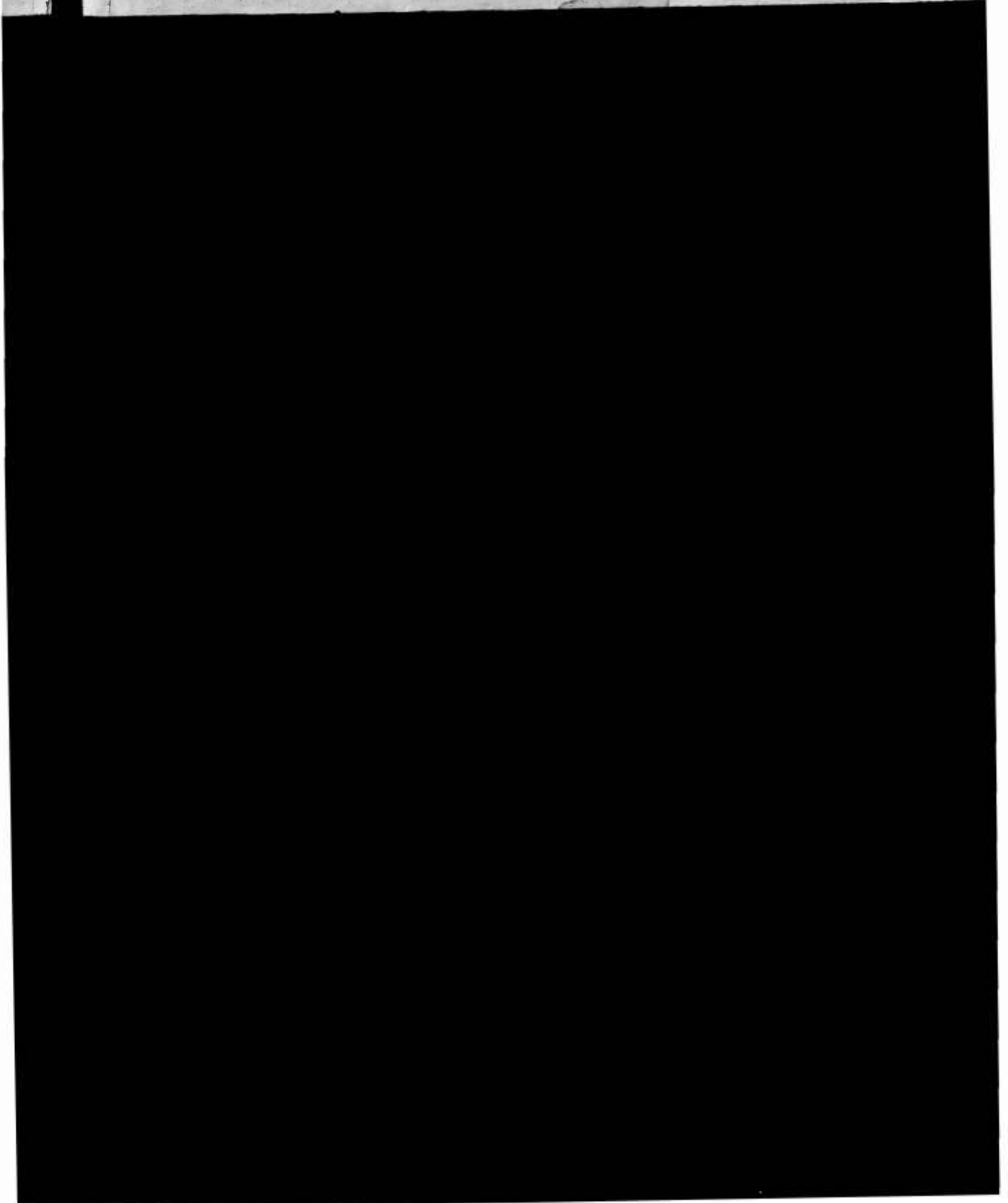
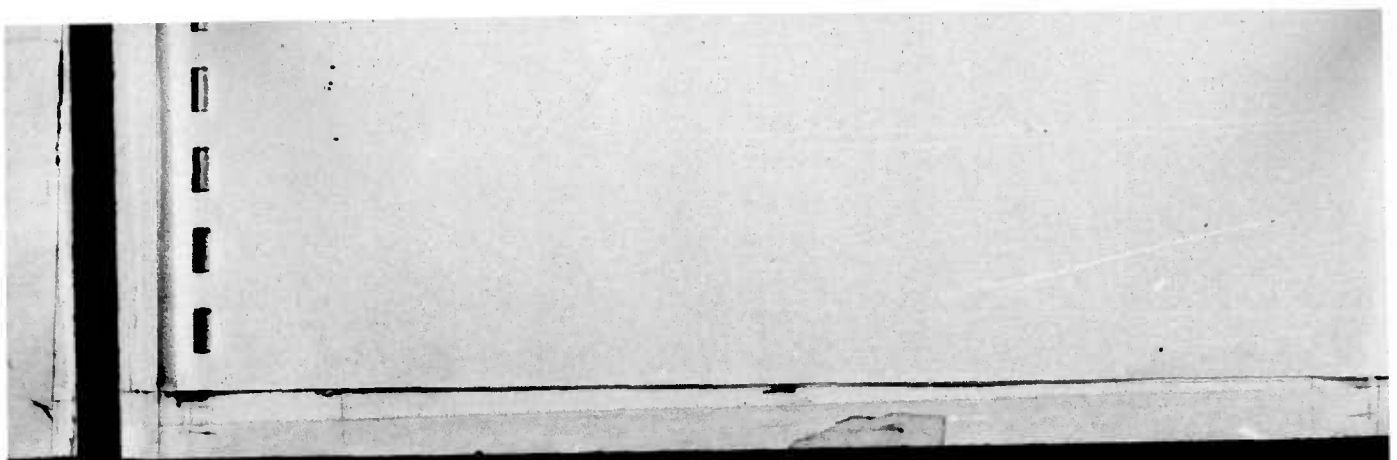
0 => Not Smoke
1 => Smoke

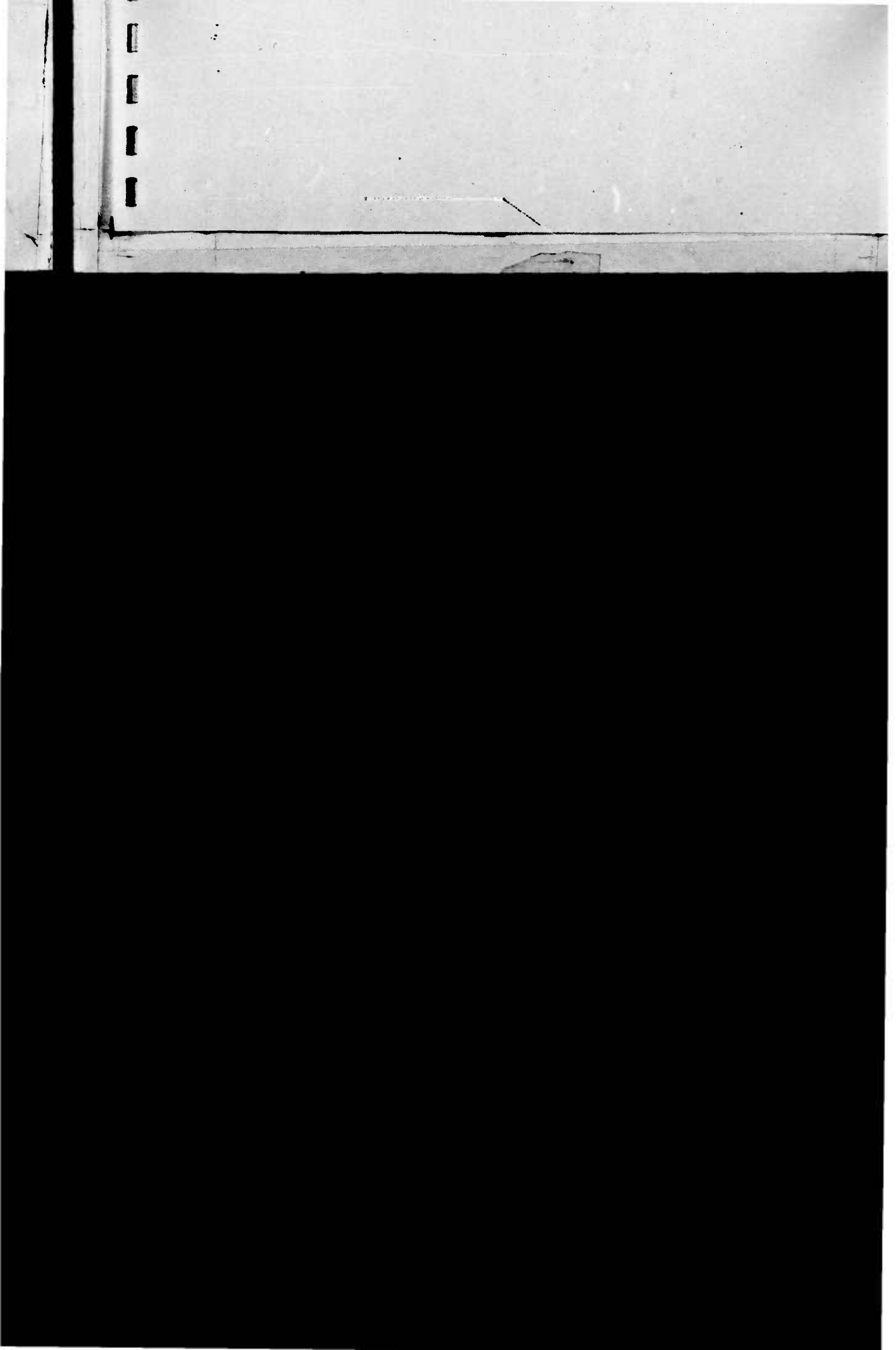
**DAT
FILM**

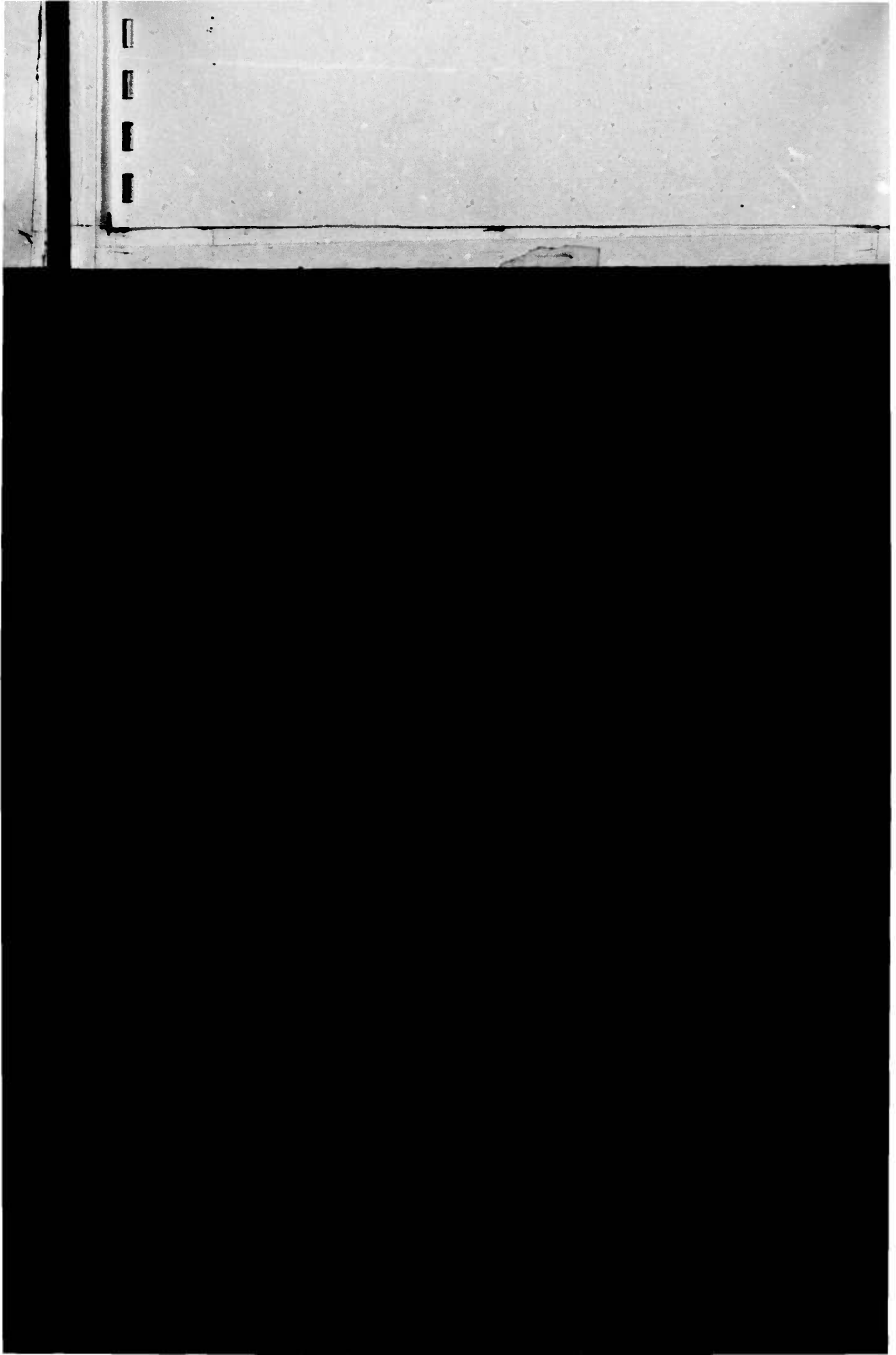


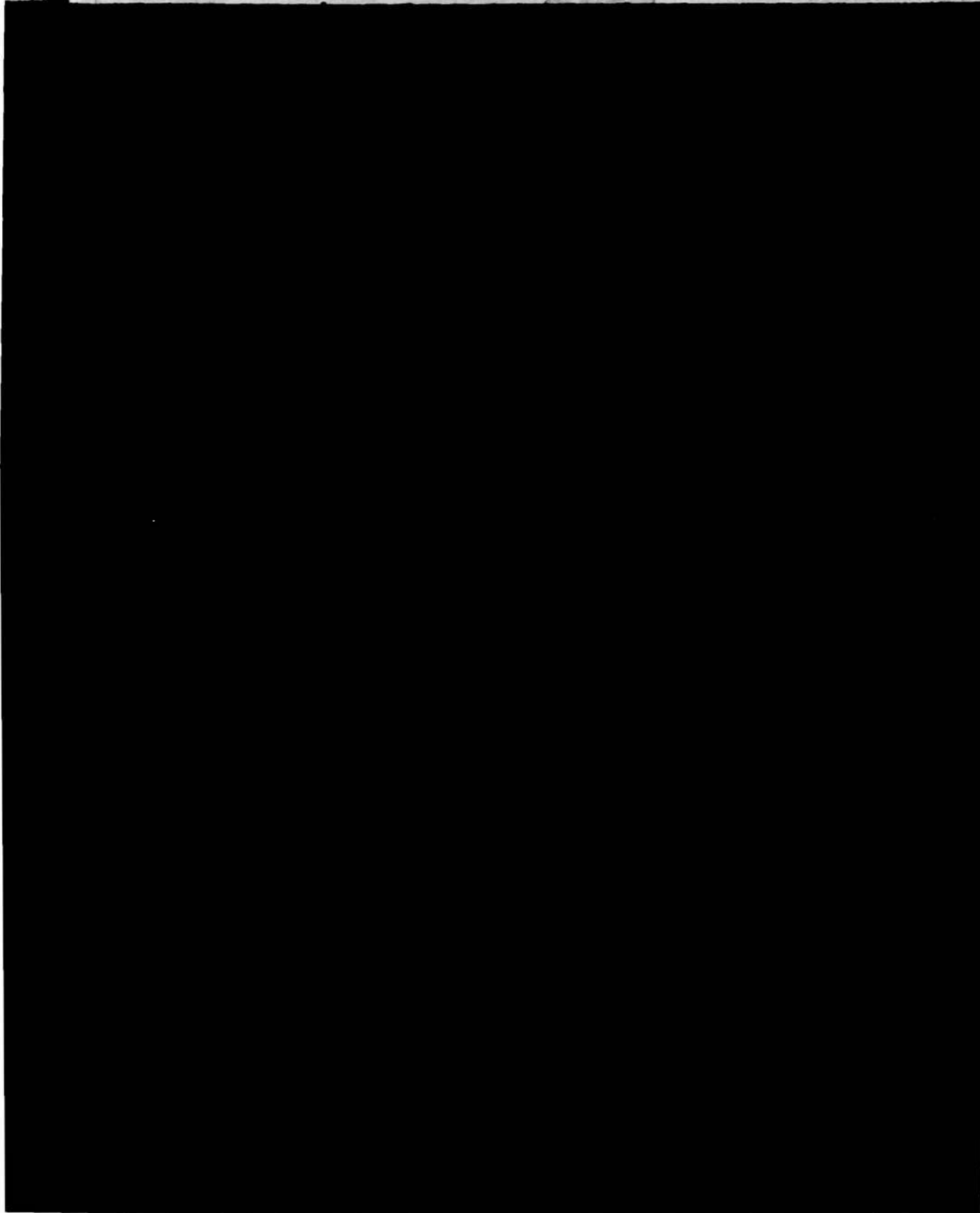
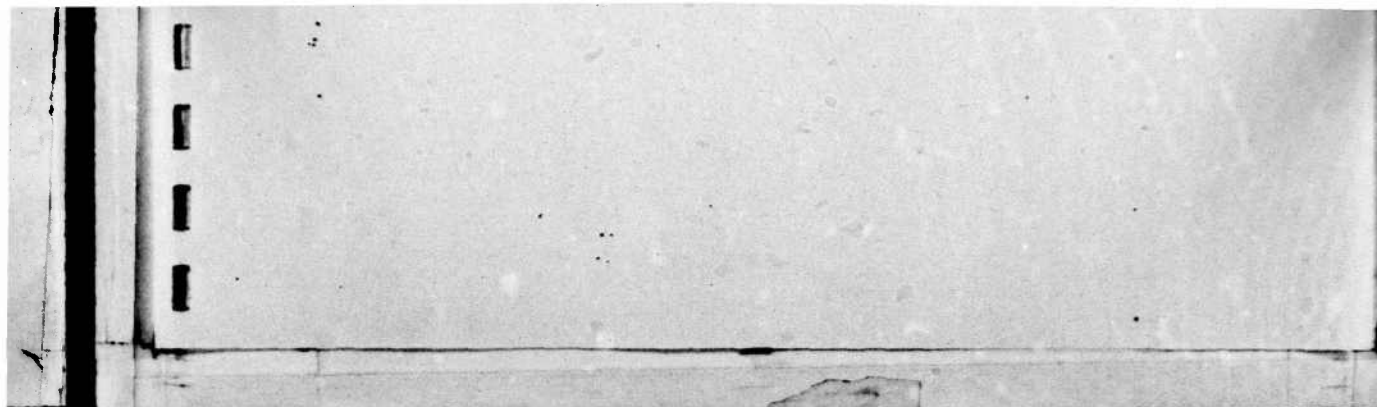




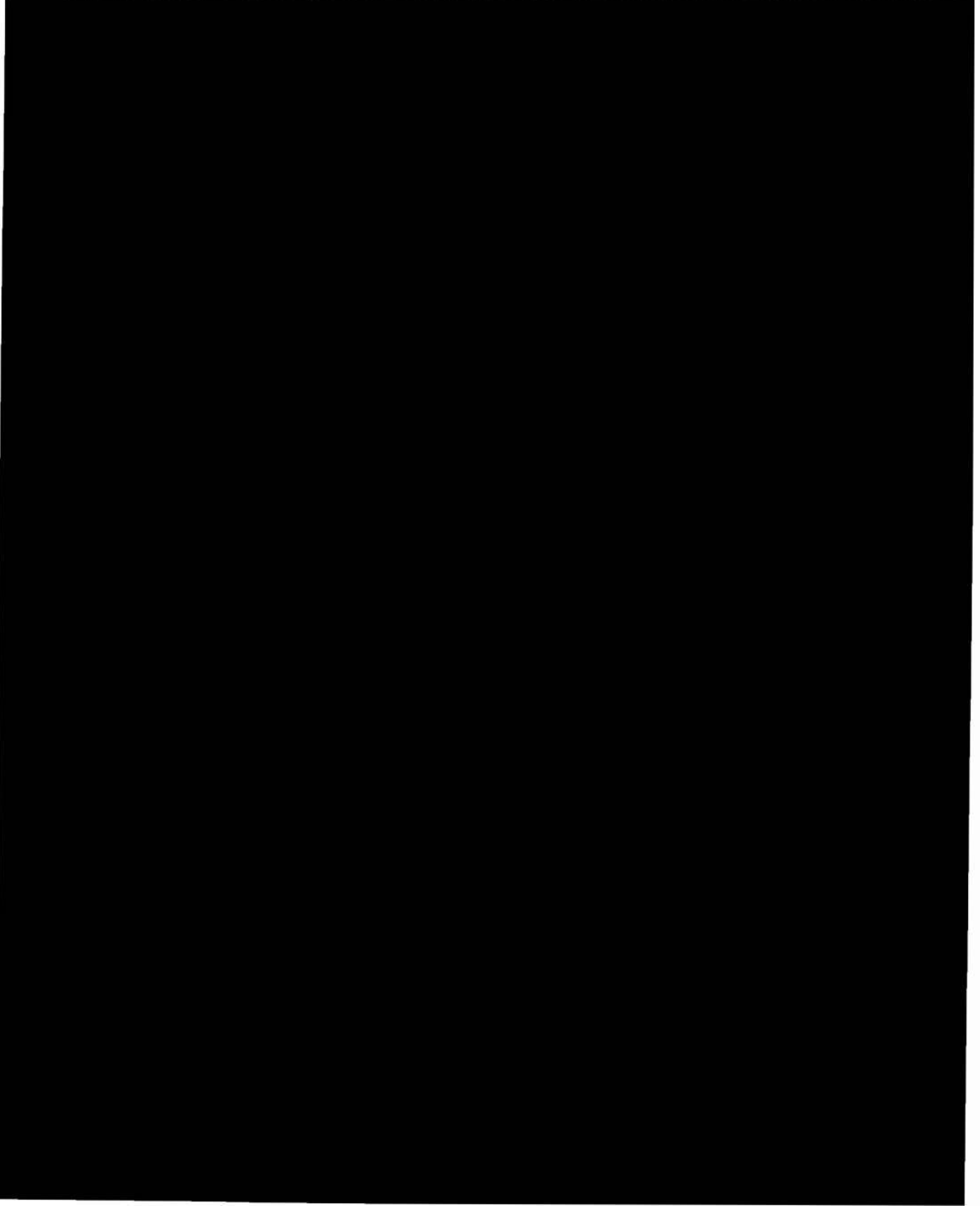
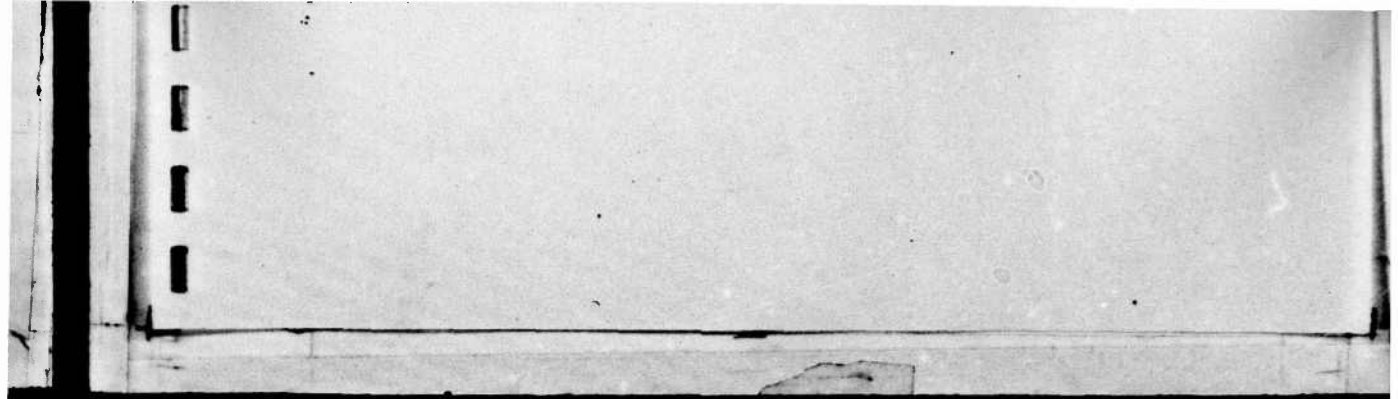








16 => Jammers
17 => Collectors
18 => Truck
19 => ADA - Uninstrumented
20 => SA9 - Uninstrumented
21 => 120 mm Mortar
22 => 180 mm Mortar
23 => Helicopter
24 => Fighter
25 => Bomber



PROBABILITY OF KILL WEAP 4

3360

PROBABILITY OF KILL WEAP 5

3360

